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THE TREATMENT OF CHRONIC ARTHRITIS.[1]

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IN discussing the treatment of chronic arthritis we are faced with the initial difficulty of nomenclature and classification of diseases of this group. As rational medical treatment should be based on the clearest possible knowledge of ætiological factors in the production of disease, it is necessary first to arrive at some standard of classification; otherwise we are likely to refer to similar morbid conditions under different names, or to consider different kinds of joint diseases under the same name, for example, *arthritis deformans*. It is therefore proposed to adopt as a standard of classification the clinical grouping accepted by the Arthritis Committee of the British Medical Association in 1933.(1)

1. Rheumatoid arthritis.
   (Synonyms: Chronic polyarthritis, atrophic arthritis, proliferative arthritis.)
   A. Primary, cause undetermined.
   B. Secondary, associated with focal or general infection.
2. Chronic villous arthritis, mainly occurring in women at or about the menopause.
3. Osteoarthritis.
   (Synonyms: Hypertrophic, degenerative.)
   A. Primary, no definite association with infection.
   B. Secondary, associated with infection.
4. Spondylitis: *ankylopoietica*—arthritis of spinal joints with bony ankylosis spreading centrifugally to large joints.
   osteoarthritica—osteoarthritis of joints of spine of primary or secondary type.

As the scope of the present discussion is restricted to treatment, it is manifestly impossible to attempt a detailed description of the various types of joint

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on July 30, 1936.

disease. It is, however, necessary to define briefly the diagnostic criteria and outstanding clinical features in the several groups, as well as to indicate recognized ætiological factors which are known to play a definite part in the production of the various types of disease.

Rheumatoid Arthritis.

Primary Rheumatoid Arthritis.

Primary rheumatoid arthritis is a disease occurring particularly during the child-bearing period in women who follow indoor occupations. Arthritic manifestations commonly commence in the small joints of the hands, which develop a characteristic fusiform shape, usually without marked evidence of active inflammation. Progress is generally centripetal, and distribution tends to show bilateral symmetry. Muscular wasting is marked, particularly of the small muscles of the hands. Vasomotor disturbances are common. There is usually depreciation of general health: anæmia, tachycardia, sweating and coldness of the extremities are frequently observed. Septic foci are not commonly found and, if present, are not regarded as of primary ætiological significance. Treatment is directed to improvement of general health with abundant diet, including fruit, green vegetables and milk. Iodine and small doses of thyreoid extract are frequently of use; cod liver oil is used, and full doses of iron if anæmia be present. Infective foci, if present, should receive attention, as should all factors tending to interfere with general health. Prognosis is regarded as reasonably satisfactory, so long as the disease is recognized early and rational treatment is instituted.

Secondary Rheumatoid Arthritis.

Two clinical types of secondary rheumatoid arthritis are recognized: (i) with acute febrile onset, simulating rheumatic fever; (ii) with subacute onset, followed by periods of exacerbation and remission. The disease is polyarticular in distribution, tends to affect both large and small joints, and is not limited to any age period, though it is commonest between twenty and forty years. The sexes are equally affected. Focal sepsis is usually the recognizable causal factor. Teeth, tonsils, nasal sinuses, gall-bladder, intestinal tract, genital tract, prostate and other organs may be the sites of streptococcal infection.

The primary indication for treatment of this type of disease is obviously the removal of foci of infection, when this procedure is possible.

Early treatment frequently leads to an arrest of the disease. In other cases the results are less favourable, possibly because of the development of secondary foci of infection or direct bacterial metastasis in tissues in relation to affected joints or elsewhere.

In some instances in which the response to treatment of septic foci is less satisfactory, it has been suggested that a local sensitization of joint tissues has been produced by repeated doses of bacterial antigen associated with a residual infection. It is probable that it is in cases of this type that the best results follow vaccine therapy, which aims at desensitization to streptococcal protein. In assessing the activity of an infective process in the various types of rheumatoid arthritis, an increase in the sedimentation rate is probably of value.

Measures devised to improve the general health are indicated, including a generous diet. The employment of gold salts, "Myocrisin", "Solganol", *et cetera,* has recently been favourably reported on and appears to have a field of usefulness in selected cases (Forestier[2]).

Local treatment of the affected joints by special methods to insure rest and prevention of deformity in the acute stages, followed by radiant heat, massage *et cetera* in the later phases, is commonly indicated and will be dealt with in the subsequent paper by my orthopædic colleague. Morbid anatomical changes are common to both types of rheumatoid arthritis.

The disease commences with a round-celled infiltration of synovial membrane, with formation of granulation tissue, which extends over the joint surface of the cartilage. Simultaneous proliferation takes place in the subchondral area, with formation of granulation tissue on the bone side of the cartilage. The cartilage becomes gradually destroyed and replaced by granulation tissue. Fibrous tissue is formed, with resulting partial or complete ankylosis of the joint, osteoid tissue being later formed in the marginal areas. The capsule of the joint becomes infiltrated by lymphoid cells and fibrous tissue is laid down, with resulting periarticular thickening.

Radiographically the bone shows characteristic decalcification: well-marked generalized osteoporosis is present in the primary type, whereas in the secondary type the calcium absorption is often more pronounced towards the ends of the bones.

Chronic Villous Arthritis.

Chronic villous arthritis (climacteric arthritis) affects women about the menopause and is characterized by gradually increasing stiffness and pain in affected joints, usually the knees. The synovial membrane appears primarily affected and there is fine crepitation audible and palpable on moving the joint. The patients are frequently florid and stout, and often show evidence of thyreoid deficiency. Loss of muscular tone and flat-foot are frequent associations, and the treatment, apart from correction of dietetic excess and thyreoid deficiency, is essentially by physiotherapy and orthopædic measures.

Osteoarthritis.

Osteoarthritis may be primary or secondary. It is essentially a degenerative disease characterized by primary degenerative changes in the articular cartilages, followed by bony overgrowth in the neighbourhood of the joints. It is a disease of the middle-aged and elderly, who are often the subjects

of arterial degeneration. The joint affected is often characteristically puffy and tender, and slight grating is felt on movement unless obscured by synovial effusion. Later, when cartilages have atrophied and the bony surfaces are exposed, coarse grating is observed. Muscular spasm restricts movement and in later stages there is marked wasting of muscles about the affected joint. Formation of osteophytes is the characteristic feature of the disease.

Morbus coxæ senilis is the classical type of primary osteoarthritis. When a single joint is affected it is rare to find signs of previous inflammation.

In the so-called "secondary type" it is common to find several joints affected.

The pathological condition is frequently a mixture of chronic inflammation and degenerative change. The radiographic picture of degenerative joint disease may be modified by evidence of infection or by changes due to gout. Trauma to a joint is regarded as a causative factor in the production of pathological change, for example, labourer's spine.

Treatment is determined by control of recognizable causal factors, including mechanical disabilities, such as flat-foot, and associated constitutional states—obesity, gout, arteriosclerosis.

Infective processes (focal sepsis) call for attention in cases in which an inflammatory process exists.

Radiographic appearances are of value in determining the nature of the pathological changes. In general it may be stated:

Decalcification is a characteristic feature of rheumatoid arthritis: loss of cartilage with osteophyte formation is associated with the osteoarthritis group; loss of cartilage with sclerosis of the bones of a joint, *e.g.*, in a single finger or toe, denotes a chronic infective arthritis; whilst the punched-out areas on the edges of articular surfaces indicate gouty deposits (Scott[3]).

Not infrequently, however, various types of disease may be found simultaneously in several affected joints in a hand in patients in whom various ætiological factors are involved.

Spondylitis.

Spondylitis Ankylopoietica.

Spondylitis ankylopoietica is characterized by a striking tendency to ankylosis of vertebral and adjoining articulations, often with marked deformity of the spine. Focal infection is regarded as the important ætiological factor, gonococcal, dental and tonsillar infection being the common causal agencies.

Osteoporosis of vertebræ and pelvic bones is shown radiographically as the primary change, with secondary ossification of ligamentous structures. The sacro-iliac joints are frequently involved early.

General treatment is directed at removal of ætiological factors and improvement in general health by adequate nutrition and restoration of calcium balance by attention to diet and vitamin intake.

Spondylitis Osteoarthritica.

Spondylitis osteoarthritica is essentially a process of osteoarthritis, as already described, affecting the bones and joints of the spine, and characterized by the features of osteoarthritis generally. Osteophytic lipping of the vertebræ is the characteristic radiographic evidence of the disease.

Treatment is essentially that of osteoarthritis, generally with applied physiotherapy and orthopædic measures.

General Principles of Treatment.

Knowledge of the ætiological factors in the genesis of chronic arthritis is still far from complete.

From the foregoing brief survey of the known ætiological factors it is obvious that constitutional disease should be considered as playing an important rôle in determining the morbid condition of the tissues in which the infective and/or degenerative processes have taken place. The importance of general nutrition and adequate diet, including the protective substances (vitamins), is commonly recognized in the prevention of these diseases. Usually a generous diet is indicated and carbohydrate restriction, as frequently advised, is probably not imperative, except in patients with lowered carbohydrate tolerance or in those who exhibit a tendency to obesity. Restriction of the higher animal proteins is desirable in patients of the gouty type who show uric acid retention; and personal idiosyncrasies in the matter of food are frequently of importance.

There can be little doubt that much needless hardship is inflicted by ill-advised diet restriction which is not infrequently enjoined more or less as a routine on all patients suffering from chronic joint disease, irrespective of the patient's individual metabolic peculiarities. The frequent association of digestive disorder not uncommonly associated with achlorhydria has received considerable attention, and is regarded as of particular importance by those who hold that free hydrochloric acid in the gastric contents constitutes a barrier against streptococcal infection.

The trend of current thought is to regard infection, particularly of streptococcal origin, as the most important single factor in the production of joint disease generally, and the necessity for the elimination or control of focal sepsis has been stressed in those forms of arthritis, particularly "secondary" rheumatoid arthritis and osteoarthritis, in which bacterial invasion has been proved to play a dominant part.

Vaccine Therapy.

Treatment by streptococcal vaccine is usually recognized as having a definite sphere of usefulness by desensitizing the patient's tissues to streptococcal protein. The general trend of opinion appears to be that whereas therapeutic response is to be aimed at by the use of small graded doses, major "reactions" with febrile disturbance are to be avoided.

Drugs as such, apart from those employed purely for their analgesic effects, have a limited sphere of usefulness.

It is important to note that many of the popular analgesics frequently employed should be carefully prescribed, in view of the ill-effects recently attributed to amidopyrine and allied substances, which form a constituent part of many of the proprietary preparations. The danger of "Atophan" and its derivatives is now sufficiently well recognized by the profession to dictate caution in their employment, although these substances can still be bought over the counter by the general public to their detriment.

Of late the employment of gold salts—"Myocrisin" and others—has been advocated by Forestier and other Continental writers, originally on the assumption that arthritic conditions were frequently allergic in nature and associated with latent tuberculous foci. Favourable results have been claimed by various authors, and the method appears to have a definite sphere of usefulness.

The profession as a whole appears to have been slow to recognize the necessity for physiotherapy and measures designed to produce local hyperæmia of joints affected by disease of degenerative type. In particular are these measures applicable also when the storm of an acute infective process has subsided and when treatment should be directed to measures designed to insure the revascularization of fibrous tissue, to break down restrictive adhesions and to restore mobility. These principles lead directly to the sphere of the orthopædic surgeon and will receive due recognition in the subsequent paper.

Acknowledgement.

Grateful acknowledgement is made to Dr. D. G. Maitland for radiographic reproductions.

References.

(1) "Causation and Treatment of Arthritis and Allied Conditions", Report of British Medical Association Committee, *The British Medical Journal*, June 17, 1933, page 1033.
(2) Jacques Forestier: "Rheumatoid Arthritis and its Treatment by Gold Salts", *The Lancet*, September 22, 1934, page 646.
(3) S. Gilbert Scott: "Radiological Atlas of Chronic Rheumatic Arthritis (the Hand)", quoted by *Clinical Journal*, October, 1935, page 431.

TREATMENT OF OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS.[1]

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IN the absence of any exact knowledge of the ætiology of arthritis, treatment is in the main empirical, and an opinion as to the value of any particular method must be based upon clinical results.

Physiotherapy affords, as a whole, the oldest method of dealing with rheumatoid and osteo-arthritis, and probably is of as much value as any other means at our disposal in the treatment of the disease. The early Greeks and Romans placed great emphasis upon hydrotherapeutic measures in their efforts to seek relief from their rheumatic afflictions, and in Europe numerous spas were established, some of which have been frequented continuously for the past 2,000 years.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on July 30, 1936.

Thermotherapy.

Of the various physiotherapeutic methods, probably one of the most valuable is the application of heat in some form. Following local exposure there is directed to the part an increased circulation of blood. Heat has an analgesic property and relieves muscular spasm, and the tissues are put in a condition to benefit more than they otherwise would from such measures as massage and passive or active movement. General exposure to heat in any form results in a loss of fluid from the body, through the lungs from the hyperpnœa that arises, and through the sweat, and following hot baths, through the urine also. Various acid substances, chiefly carbon dioxide, are lost from the body, resulting in an alkalosis, the excess of alkali being eliminated after removal of the heat through the urine and sweat until the normal acid base equilibrium is restored.

Heat may be administered in various ways, such as radiant heat and hydrotherapy, both of which may be applied to the affected joint only, or to the whole body. An essential phase of hydrotherapy consists of contrasting applications of hot and cold water which help in stimulating and restoring the tone of the peripheral circulation; a true metabolic whip is afforded by cold water properly used.

Diathermy, in which the heat is actually produced in the affected tissues by electrical means, is of value owing to its greater penetrating effect and to the deeper hyperæmia that can be obtained. The use of diathermy in the so-called villous or menopausal arthritis, and in cases arising in young women at the onset of menstruation must also be borne in mind. In these, diathermy to the ovarian region frequently results in the restoration and regulation of menstrual function, subsidence of the inflammation of the joints and complete functional restoration, unless the joints have suffered such organic changes that complete restoration is impossible. Arthritis has been successfully treated when the uterus and tubes have been removed, the ovaries remaining. On the other hand, when the ovaries have been removed without the uterus and tubes, the arthritis may not respond to treatment by pelvic diathermy.

Ultra-short wave therapy, the most recent development in physical medicine, is stated by those who have had the most experience with it, to be definitely superior to other methods of applying heat.

Massage.

Massage, when correctly given, allays painful muscular spasm, helps to restore muscle tone, and improves local and general metabolism. It relieves congestion and improves the circulation through the parts both by assisting the venous return and by action upon the arterioles through the vasomotor

system. By the relief of congestion the œdema of the deponent parts, so frequent in the rheumatoid type of arthritis, is improved and the atrophic shiny skin is changed often to a more normal appearance.

Heliotherapy.

Especially in the earlier stages of rheumatoid arthritis is the action of the sun's rays and ultra-violet light beneficial. The improvement occurring is probably attributable to the resulting vaso-dilatation and increased metabolic rate. The natural sunlight is preferable to that produced by artificial means, largely owing to the fact that natural heliotherapy is combined with the exposure of the body surface to the effect of fresh air in movement, which is itself a stimulant to metabolic activities.

Exercise.

Active motion and careful passive motion have their place in the treatment of arthritis, but great care must be taken to avoid undue irritation to an inflamed joint. Active exercise has a greater beneficial effect upon the general bodily functions than the most vigorous form of massage and passive exercises, and thus every effort should be made by both physician and patient to attain the maximum amount of activity. Active movements, being voluntary, are sure to be gentle, being limited by pain, while the muscle is truly exercised.

Rest.

An equally important consideration in the treatment of arthritis is the question of rest, not only local rest of an acutely inflamed joint which will be dealt with later, but also general systemic rest. In training for any sport the principle of balancing exercise with rest is widespread, but it is constantly overlooked in the treatment of disease, and especially in the treatment of arthritis of the rheumatoid type. Here there is a constant wear and tear due to the nervous strain of the disease itself, and usually the patients are endeavouring to carry on their ordinary duties, whether in the business or domestic world. These patients often complain of fatigue and general inertia, and frequently wake up in the morning feeling more tired than when they went to bed; that is, all their reserve has been used up and the capacity of the tissues to respond when the load is removed is not forthcoming. One of the best ways to obtain rest is to insist that the patient lies down upon his back in quiet surroundings for one hour in the middle of the morning and another hour in the mid-afternoon, for the double purpose of supplying distributed rest periods and of preventing some of the fatigue which the pressure of the day produces. If this cannot be carried out satisfactorily at home, hospitalization should be insisted upon.

Prevention and Correction of Deformities.

The deformities that occur in arthritis, particularly in its more acute forms, are primarily due to muscular spasm and the adoption of the relief position. In the extremities slight flexion of joints is the position of rest and of ease; whilst in certain joints other deformities such as adduction or rotation may be superadded owing to spasm of other powerful groups of muscles. The deformity is always progressive and later tends to become fixed owing to actual shortening of the structures on the side of greatest contracture, particularly the joint capsule, ligaments and periarticular tendons. In many cases intra-articular adhesions play an important part in this fixation by deformity.

During the very acute stages the principles of rest must be applied, since friction of tender joint surfaces means irritation and further effusion. Although normally our aim should be the retention of a movable joint, yet owing to the possibility of ankylosis occurring the joint should be placed in the optimum position, in a splint if necessary, and the splint should be easily removable so that any additional treatment at a slightly later stage of the disease can be carried out.

When the disease has passed the very acute stage, active movement within a painless range should be encouraged, and passive mobilization should be given once a day, and the individual joints should be moved once only. The extent of movement should be limited by the pain produced and increase of pain should be avoided. There is no object and much harm done in repeating the passive movement several times on the one occasion; the reason behind this mobilization in the subacute stage is to prevent further deformity, but not as yet to overcome that which may be already present, and if adhesions are present gently to stretch them. Whilst joints are being moved, traction should be exerted so as to separate as far as possible the articular surfaces; this results in more effective movement, and much less pain is produced.

If the joint is kept absolutely at rest and no attempt is made to direct or to improve upon Nature's reparative efforts, the joint will gradually assume a position of gross deformity. If the joints have become deformed and the acute or very painful stage has passed, it is the surgeon's duty to place them in a good position with a view to function. The correction of deformity may be brought about either by gradually straightening out the joint by successive plaster splints or wedging plasters, or by the use of such corrective splints as the Thomas caliper for the knees, banjo splints for the hands, cock-up splints for the wrists and aeroplane abduction splints for the shoulder. If correction of deformity cannot be attained by these methods, a manipulation of the joint under a general anæsthetic may be carried out. One must, however, carefully select the cases and be absolutely sure that the arthritis is not still actively progressing, because manipulation of a joint showing active disease often results in complete ankylosis or increases the tendency to fusion. Yet the mere presence of pain and thickening in a joint is not necessarily a sign of activity, but may be due to adhesions, either intraarticular or periarticular, and the pain will disappear when these are broken down. Provided, then, that the stage is at least one of quiescence, manipulative surgery is used in the presence of certain specific indications; these are, the presence of adhesions or adaptive muscular shortening limiting movement or causing pain, after

removal of causative factors in non-traumatic cases, when the reaction resulting from the removal of any antecedent lesion or focus of infection has settled down for at least eight weeks, after the failure of passive stretching accompanied by physiotherapy, and when the saving of time is important, and when a routine X ray examination shows no lesion in contraindication, such as a marked osteoporosis or associated proximal bone disease. In the knee a freely mobile patella is also necessary. Under these conditions, manipulative surgery is of very considerable value in the removal of obstacles to movement which constitute the aftermath of the disease, and the prognosis varies adversely as the joint space diminishes. Prognosis is particularly good when trauma has been an aggravating factor. Full general anæsthesia is essential to obtain complete muscular relaxation. In minor degrees of deformity full movement can often be restored by one manipulation, but when the stiffness is marked and when several joints are affected, more than one manipulation is necessary, lest the reaction resulting from the breaking down of the adhesions and the damage to the surrounding muscles which have suffered from contracture and loss of elasticity be too severe. This damage will be repaired by more fibrous tissue and the second stage will be worse than the first. In these cases it is safer and better to proceed by stages, at intervals of seven to ten days, when the patient can voluntarily and with comfort move his joint through the increased range. A slight increase of pain commonly follows manipulation, but this gives place to greater comfort after the first day or so. Active movements should be started as soon as the patient recovers from the anæsthetic, assisted if necessary by heat and passive movements, and should be carried out daily. The masseuse should attend during the forcible mobilization of the joint in order to have a clear picture of the degree of movement attained thereby. Vigorous after-treatment is as important as the operation itself. Manipulative surgery in suitable cases gives a wide range of temporary relief, which results partly from the breaking down of adhesions, but certainly also is partly due to improvement in posture and possibly to the increased hyperæmia. When manipulative surgery with appropriate after-treatment is followed by permanent relief, it is probable that the basic cause of the arthritis has been eliminated.

Surgery in Arthritis.

Operative procedures should be undertaken as far as possible when the general condition of the patient is good and when the inflammation of the joints is quiescent, and should be resorted to only after long and unsuccessful trial of non-operative methods of treatment.

The correction of fixed deformities may require a combination of various mechanical and operative measures, and much can be done even in extreme cases; but surgery would not be needed except in isolated instances if early preventive treatment was employed.

Broadly speaking, the indications for operation are deformity and pain. Our choice of possible surgical procedures rests between: (i) Manipulation of the joint in order to increase the range of movement; (ii) the formation of a new joint at the site of the old one—arthroplasty; (iii) the formation of a new joint close to, but not at the original site—pseudo-arthrosis; (iv) complete destruction of the joint and ankylosis by operative means—arthrodesis; (v) an alteration of the weight-bearing through the joint by means of an osteotomy; (vi) special procedures for different individual joints, such as cheilotomy (or chipping off of osteophytes) at the hip, posterior capsuloplasty and synovectomy and removal of hypertrophied fringes at the knee.

Thus we have a wide selection of surgical procedures, the choice of the most suitable operation being at times difficult. The weightbearing joints, that is the ankle, knee and hip, are the most frequently subjected to open surgical interference.

Manipulation of joints has already been dealt with.

Theoretically an arthroplasty is the ideal surgical procedure in every case of painful arthritis. At the metatarso-phalangeal joint of the great toe an operation of this character is performed as a routine, with excellent results, by many surgeons for conditions of *hallux valgus* and *hallux rigidus*. But although many ingenious procedures have been described for the larger joints, yet the average results of arthroplasties have been decidedly poor. There is an obstinate tendency to restiffening of the new joint and to the onset of arthritic changes therein.

The operation of pseudoarthritis, or the formation of a false joint at some distance from the affected joint, is at times used when both hip joints are involved and useful movement is not possible. It is an operation designed to give movement when movement is essential, such movement being obtained usually at the expense of a certain amount of stability. When both hips are involved, it will often be found that one hip is painless and stable, whilst the other shows a small range of painful movement. If the operation is carried out in such a case it should be performed on the painful side, the painless limb being left as a sound weight-bearing pylon. The procedure can be fairly rapidly performed, and is associated with but little shock.

Arthrodesis is the operation most frequently carried out in advanced arthritis of the ankle, knee and shoulder, and monarticular osteoarthritis of the hip joint, where the indication of severe pain is present. When successful, it eliminates all pain from the joint, retains full stability, and leads to little or no shortening of the extremity. In the case of the ankle, knee and shoulder, this procedure usually produces excellent results, but in the case of the hip joint, late disabilities sometimes arise. The patient may experience great relief for a number of years, but may then return complaining of pain and aching in the lower lumbar region, due partly to the increased work thrown on this area by the absence of movements in the hip joint. In this joint also the operation is one of some magnitude, involving considerable shock.

The question of shock must be very seriously considered in any operative interference with chronic

arthritics, as the majority of them are elderly and have a lowered general resistance. At the hip joint probably the most suitable operations are a Lorenz (or modified Lorenz) bifurcation osteotomy or a simple trochanteric osteotomy. These procedures have many advantages: they can be performed in a few minutes; the shock is negligible, and the recumbency after the operation need not be so long or so continuous as it must be after arthrodesis of the joint. The results of these operations are usually excellent. Pain generally disappears, movement, although reduced, is still present, and takes place through a different angle, and there is not the same tendency to strain the lumbar and sacro-iliac regions.

A small series of cases have been investigated in which the bone trephining operation has been performed. The only cases submitted to this procedure are those that have not responded to the usual routine measures other than open surgery, and these constitute only a small proportion of the total number. Examples can be enumerated in which one particular factor among these routine measures apparently has been responsible for dramatic improvement in individual cases, and these specific factors vary. For example, in the presence of gross dental and other infections, complete symptomatic relief frequently follows the use of modified diet in osteoarthritis. Cases occasionally occur, but more often in primary rheumatoid arthritis, which are not greatly influenced by any measure of treatment, and in which patients experience complete relief from symptoms with absence of acute physical signs for six to eight weeks following incidental operation, not necessarily on bone, such as hysterectomy, operation for *hallux valgus* and desiccation of a carbuncle. Such relief is immediate, and is the first impression the patients receive as they recover from the anæsthetic. Among our cases of fractured femora there have been several having relation to arthritis. In one of these cases the onset of subacute rheumatoid arthritis occurred four weeks after the date of the fracture; and in the others during the course of recumbent treatment there were exacerbations of preexistent generalized osteoarthritis. It is intended to submit to the bone trephine further cases, selected in the same manner, but the results have not been encouraging to date; one patient manifested improvement, whilst the other nine apparently have not benefited at all. It must be admitted, however, that our cases are insufficient in number to enable us to come to a final opinion.

In conclusion, let us always bear in mind that arthritis is a constitutional disease. To control it, the disease has to be approached from many angles. There is no single panacea in treatment. The malady involves the joints, and deformity will result therefrom. The attempt to correct deformity is generally unsatisfactory, but prevention is comparatively easy in the early stages. This is secured by the use of splints with the joint in the optimum position in case ankylosis should occur. Protecting joints in the acute stage is the quickest way to relieve pain in them, and the rest shortens the convalescence. Joints that have been deformed can be corrected in many cases by the use of various forms of apparatus, by manipulation and by surgery. However, no matter what method of correction is used, joints are never so good after deformity has once occurred, as they are if the deformity had never been allowed to take place. To this end the orthopædic surgeon should always work in conjunction with the physician from the very beginnings of the arthritis, and should never relax his efforts to maintain normal physiological function and to keep the joints from developing contraction deformities.

MEDICAL PRACTICE DURING THE GOLDFIELDS ERA IN VICTORIA.[1]

By E. Alan Mackay, M.B., B.S. (Melbourne),
Melbourne.

Events of outstanding importance in the history of this State occurred in the decade 1850 to 1860, a period which has been aptly termed "The Roaring Fifties". Scarcely had the echoes of the celebrations which marked the attainment of separate government died away when news of the discovery of alluvial gold in New South Wales caused a rapid exodus from Melbourne. But within the year the news of the marvellous finds at Bendigo and Ballarat and elsewhere in Victoria brought the gold seekers hurrying back, while from overseas came an ever-increasing flood of all sorts and conditions of people, British and foreign, which caused a complete upheaval of the social, commercial and political life of the newly-formed community. The medical profession had become an influence in the body politic by reason of the calibre of the men who had established themselves in practice, and of others who were among the foremost pioneer squatters. It will be interesting to review their reaction to the period of turmoil, extravagance and rapid development which followed the discovery of amazing wealth so easily and so quickly won. A brief statement of facts connected with local medical history may now be made. We may take pride in recalling that it was a member of our profession, George Bass, R.N., the intrepid navigator, who discovered this southern coast, when in 1798 he entered Western Port and later in the same year, with his friend Matthew Flinders, sailed through the straits which bear his name. A Dr. McCallum accompanied the party of Messrs. Grimes and Robbins when they discovered the Yarra River in 1803; and the ships *Calcutta* and *Ocean*, under the command of Colonel Collins when he made his attempt at settlement at Sorrento, had their own surgeons. But medical practice, so far as Melbourne is concerned, began with the advent of Barry Cotter and Alexander Thomson, who came with the parties led by Batman and Fawkner from Van Diemen's Land in 1835. We are indebted to the late Dr. George Howard for information about the early practitioners of Melbourne, which he gave in his inaugural address to this Section in 1933.

[1] Read at a meeting of the Section for the Study of the History of Medicine of the Victorian Branch of the British Medical Association on April 3, 1936.

The number of settlers being at first very limited, the attention of medical practitioners was directed chiefly to pastoral affairs and the care of their flocks; but their medical services were available if required. When Dr. Thomson took the site of Geelong as his station, Barry Cotter was appointed medical officer to the village. He was not long in sole possession, for with the official party which was sent from Sydney to regularize the illegal settlement came Dr. Cussen; and within two or three years quite a number of medical men had passed through Melbourne to take up squatting areas. Some of them were casting appraising eyes on the growing village with a view to possible practice, while others came with that definite intention; and so by twos and threes the numbers grew.

In the *Port Phillip Gazette* of June 15, 1837, there appeared the following advertisement:

> Dr. Patrick and Dr. Wilkie have entered into partnership with a view to practising their profession. Consultation at Dr. Wilkie's residence, Elizabeth St.

In an October issue of the same year:

> Dr. Cotter begs to announce to his friends and the Public that he has made arrangements with Dr. McCurdy, a physician and surgeon of experience, lately from Edinburgh, by which his services will be afforded to any persons who will honour him with their confidence, and that for future his establishment will be conducted under his immediate direction. Drs. McCurdy and Cotter beg to announce that they have at present a large and valuable supply of the best medicines which, with every kind of cattle remedy also of the best description, they will dispose of . . .

The community, consisting as it did chiefly of healthy young adults living an active open-air life, did not need much medical attention, and competition became keen. The doctors were all general practitioners. It was the custom to form partnerships, and consultations other than between partners were unusual. Moreover, until the Melbourne Hospital was opened in 1848 there were few opportunities for the men to meet professionally. But some of them, forgathering from time to time at the stop-gap hospital which they had started, arranged to get medical literature for exchange, and the idea of a society for the discussion of medical and scientific matters arose. It was of slow growth until the menace of increasing quackery and unlicensed practice rendered some measure of medical reform imperative. There was at that time no law to prevent any person from assuming a medical designation and setting up in practice. This had happened before the discovery of gold, and after that event it became a frequent occurrence.

In the steadily progressing town of Melbourne the public had recognized that such men as Wilkie, Thomas, Motherwell and others were men of dependable medical attainments. These men had quickly taken leading positions in the life of the community, while up and down the country there were many doctors who, as enterprising squatters and philanthropic neighbours, had proved their value as pioneers. It was Dr. Howard's paper which directed my attention to the part played by some of them in opening up the country, encouraging further settlement, and improving the standard of stock-rearing. I was able to collect the names of more than forty who were holding pastoral leases prior to Separation, but in presenting a list at a previous meeting of this Section I inadvertently omitted the name of one of the best known of them, John Pearson Rowe, who for more than thirty years held a leading position among Victorian pastoralists. He was a man of wide interests and cultivated tastes, and found time to further the cause of medical education. He was an original member of the University Council and a member of the committee which started the Medical School. His first house in Melbourne was in Flinders Street, where the Metropolitan Gas Company now has its offices. When the company bought that site he moved to a house on the Heyington slope of Toorak, and it became the centre of the musical culture of the time. A rose garden flanked by vineyards was a feature of the place. His birthplace was Aintree, in England, and in that steeplechasing atmosphere he no doubt absorbed the knowledge of horses and the love of life in the open which was to find its full opportunity when he came to Australia. Coming to Sydney in 1834 as surgeon to the ship *Isabella*, he proceeded to Hobart and joined Dr. Crowther in practice. In 1843 he came to Port Phillip and purchased the lease of Delatite run, where he established the homestead Loyola. Then he went to Restdown on the Campaspe. The town of Rochester takes its name from Ro and chester (*castra*, a camp). When the diggings broke out the old colonial system of hospitably providing bed and board for all comers was overstrained. Dr. Rowe then built an hotel at the crossing. That was the beginning of the town. He called it The Apeles, that having been the name of the Greek artist who immortalized the beauty of Campaspe, the concubine of Alexander the Great; but the classical allusion was lost on the travellers, who spread its reputation as Seward's Apples, Mr. Seward being the first lessee. It is reminiscent of Bret Harte's diggers puzzling over the name of the Homeric hero Ashheels. What a pity it is that there was no Bret Harte or Conan Doyle on our goldfields. What a wealth of incident might have clustered "Round the Red Lamp" at Chinaman's Gully or Eaglehawk!

Dr. Rowe owned a number of well-known stations in the north and north-east of Victoria, among them Pyramid, Burnewang, Mount Battery, Killeen and Seven Creeks. The last-named has historic association with the Saxony merino flock brought there by Mrs. Forlonge, to whose memory a monument has recently been erected on the estate. Dr. Rowe was himself an early importer of fine-woolled sheep, having purchased rams from the famous Silesian stud of Prince Lichnowski. At a later date he bought in England a number of horses to establish a stud at Killeen. One of the stallions was sold on arrival for a thousand guineas, and his stock set the seal of fame on a well-known stable in New South Wales.

Dr. Rowe conferred a benefit on the grazing industry and on the finances of the country by introducing the lime and sulphur dip, a cheap and effective treatment for scab in sheep.

Another very early medical squatter was William Clark Haines, who took up a station in the Barrabool Hills with Dr. Thomson. But he soon found greater

interest in the political questions which were agitating the colony and, having independent means, he made his home in Melbourne and took a leading part in the movement for Separation. He was appointed to the first Legislative Council in 1851, and three years later was nominated as chairman of the commission to inquire into the grievances of the miners after the Eureka affair, but declined to act owing to his official position. He was then made Colonial Secretary. In this connexion Sutherland, the historian, writes: "Even political opponents recognized the thorough uprightness of intention which had secured for him the designation of Honest Haines." When Victoria secured fully responsible

FIGURE I.
Dr. John Pearson Rowe (born 1810, died 1878).

government, he became the first Premier of Victoria. In 1861 he became treasurer in the Cabinet of his former opponent, O'Shannassy, who "recognized the value of his personal integrity and patient courtesy at a time when feelings ran high over new and untried political systems". He was a man of few words and austere demeanour, a pillar of the Anglican church, who nevertheless raced his own horses and rode to hounds. At Caius College he had been a fellow student of W. M. Thackeray, and the friendship then formed was maintained by letter. His Melbourne home was Whitelodge in Toorak Road, and in the church opposite a beautiful window has been placed to his memory.

Before gold was discovered the squatters, by reason of their possessions, were the dominant class; but the expanding commerce of Melbourne was already producing a sense of rivalry between country and city interests when there came the tide of immigration which almost overwhelmed the former colonists. The commercial section reaped immediate benefit from the influx of wealth, but graziers and farmers found themselves suddenly bereft of employees, because every able-bodied man hurried to join the rushes where the stroke of a pick or the turn of a shovel might spell fortune. The squatters might do their own shepherding and shearing, or else abandon their holdings and join in the search for gold. Some actually took the latter course, but the more farseeing waited for the opening of new markets, and their reward came when the labour market became readjusted. But in the meantime many of the sheep runs had lost their value as grazing areas.

Medical men already in practice were perhaps better able than others to accommodate themselves to the new conditions. If his patients went to the diggings the doctor could follow. He would at least have the nucleus of a practice; and with a horse and a tent, a leather case with a few instruments and some straightforward drugs such as laudanum and calomel, he could carry on, and in spare hours could do a little prospecting on his own account. The historian Ballière tells of a Melbourne medical man who had made a reputation as a blood-letter, and of whom it was said: "Dr. Blank has gone to the diggings to open veins with a pickaxe." He tells of another who with three friends set out for Castlemaine. Leaving their horses in a paddock, they carried their saddles and impedimenta for several miles before finding a suitable place to begin operations. After three days of toil they set out, with aching limbs and blistered hands, to walk back. without having seen the colour of gold. The practice had vanished.

Each incoming ship brought additions to the medical ranks; and besides qualified practitioners there came a host of quacks and charlatans. It can easily be seen how hard the profession was hit. Fortunately there were many men in Melbourne and in the country who had been trained in the spirit of the Hippocratic code. They maintained the ethical standards of their calling, and there came into being, though not without a great deal of patient and unselfish work on the part of a few who had the qualities of leaders, a medical society and a medical journal. The opening of the Melbourne Hospital had given the profession a rallying point, and the formation of a society was mooted; but it was not till the need for united efforts to control irregular practice became insistent that the society became an accomplished fact. In this connexion two men stand out as organizers of vision and ability—John Maund and Richard Thomas Tracy. The former, in his short life, conferred a lasting benefit on the profession in Victoria by bringing the men then in practice into harmony, and by founding the *Australian Medical Journal*. He was ably seconded by Tracy, whose organizing ability and forceful and attractive personality proved invaluable in carrying on these projects after the untimely death of his colleague, which occurred in 1858. In the five years of his life in Melbourne Dr. John Maund had shown himself to be a man of exceptional qualities. The

obituary notices which appeared at the time indicate the loss that not only the profession but the whole community had sustained by his too-early death. It was delicacy of health which brought him to this country, as was the case with many who became leaders in thought and action under the altered skies. And there is a nut for the eugenists to crack.

Dr. Maund's name will always be associated with the beginning of specialism here. Among the throng of immigrants were many expectant mothers. There was no accommodation for them in any place save the overtaxed Immigrants' Home and the crowded tents of Canvas Town. The babies might be born on the wharf or by the roadside. Dr. Maund faced the problem. He called together a small committee of women to prepare bags of old linen and other necessities which were handed to the newcomers who needed them, and, with Dr. Tracy to assist him, he rented a house in Albert Street near the site of this hall and opened it as The Lying-in Hospital.

FIGURE II.
John Maund, M.D. (born 1823, died 1858). (Reproduced by permission of the Trustees of the Melbourne Public Library, from an original oil painting by Chevalier.) (Copyright.)

Its value was so obvious and the need so insistent that money was soon forthcoming for a special building. Land was procured in Carlton and the Lying-In Hospital, which has now become the Women's Hospital, was founded. Dr. Maund's death left the carrying on of the hospital in the hands of Richard Tracy, who fortunately had the aptitude and the inclination for the class of practice, which now became his life interest; during the next two decades he built up for himself and the hospital a reputation which extended overseas. In 1871 the Obstetrical Society of London conferred its fellowship on him in recognition of his writings and teaching in his specialty. When the Medical School was opened he was appointed Lecturer in Obstetrics and the Diseases of Women and Children, and held the position till incapacitated by the illness which

FIGURE III.
Dr. Richard Thomas Tracy (born 1826, died 1874).

proved fatal. He died in 1874, aged forty-eight years. His ailment was of a lingering and obscure nature, and it is typical of his scientific outlook and altruistic nature that he left instructions for his medical friends to perform an autopsy. This was done by Dr. Motherwell and Dr. Neild, Dr. Martin and Mr. James being also present. A cancerous mass involving the small intestine was disclosed.

It is now my privilege to show you a relic of the goldfields. It is the calico sign, measuring thirty-two by twenty inches, with six-inch lettering, which Dr. Tracy displayed on his tent at Bendigo. Thinking that some of his friends would be amused by this evidence of the primitive methods employed on the fields, he rolled it up and brought it away when he left the diggings. With the passage of time it became a treasured heirloom; and now by the courtesy of his surviving daughter, Mrs. Charles D'Ebro, it has been handed to the society which her father helped to found.

Dr. Tracy's decision to come to Australia depended on the toss of a coin. He was born at Limerick, and before entering as a student at Trinity College, Dublin, he had a year of apprenticeship in the Limerick Infirmary, an experience which he was often heard to say had been of very great value.

Three years of medical study in Dublin were followed by a year of surgical work in Paris. After that came an appointment in Glasgow, where he obtained his M.D. degree. There was an outbreak of cholera in that city, and he was for some months in charge of the Cholera Hospital. Dr. Tracy had previously had experience of an epidemic of famine fever in Ireland and had nearly lost his own life at the time. While in Glasgow he received a letter from a friend who had come to Adelaide, advising him of an opening for practice. He was then negotiating for a passage to Canada and decided to toss a coin. Australia won. His *fiancée*, Miss Sibthorpe, in Limerick, was consulted and confirmed the decision of the coin. They were married and at once set out for Australia, arriving in Melbourne in 1851, just

FIGURE IV.
The calico sign used at the Bendigo diggings in 1852. Presented to the Victorian Branch of the British Medical Association by Mrs. Charles D'Ebro, daughter of Dr. Tracy, 1936.

when the exodus for the newly discovered goldfields in New South Wales had set in. Continuing the voyage to Adelaide, he began practice there; but within a few months the news of the wonderful gold discoveries in Victoria was made known, and most of the people set off for the diggings. Tracy and three friends, one of them being Bonwick the historian, joined the gold seekers. He went first to the Loddon and then to Bendigo. Having tried his hand at digging with poor success, he concluded that medical practice was a better means of livelihood. After a few months of practice at Bendigo he became ill. He went back to Adelaide to convalesce, and then brought his wife and child to Melbourne and began practice in Brunswick Street in the only house then available. Success came quickly and he soon became a notable figure in the professional and social life of Melbourne. While carrying on a large and extensive practice, he gave much time to organizing the Medical Society, to the journal, and to the Medical Benevolent Fund and other charitable movements. He was president of the Medical Society in 1860, and was recognized as the leader of the profession.

The circle of practitioners of high standard and good repute continued to increase, but there were others whose diplomas were of doubtful merit, and frank quackery was rife. A visitor named William Kelly published a volume in London entitled "Victoria in 1853 and 1858". *The Lancet*, in 1860, reprinted some of Kelly's picturesque statements, and they were reprinted again in the *Australian Medical Journal*. He relates that he was strolling along a street in Emerald Hill (South Melbourne) and entered a chemist's shop. His attention was drawn to the following advertisement:

To be disposed of on moderate terms.

The first class Dublin Diploma of the late Dr. T——. Apply to his disconsolate widow at the old surgery in the tent next the European National Restaurant, Clarendon St.

The chemist vouchsafed that his own prospects were decent but somewhat damped by the premature death of the M.D. of the Hill, who, he stated, "had slipped through in Delirium Tremens". He suggested that Mr. Kelly might call and see the lady about the diploma and, on his disclaiming any knowledge of the practice of medicine or surgery, the chemist assured him that

. . . a tolerably smart man of good address and general knowledge with a smattering of Latin would make a fair average colonial doctor, as the country being new was not troubled with any dangerous variety of diseases beyond dysentery, ophthalmia, rheumatics and a few of the secret type.

"Now and then", he added, "a bad lying-in case occurs, but the midwife gets the blame." He made the further assertion that there were several doctors and surgeons in full practice about Melbourne who had never attended a lecture or smelt a subject, and more than one who compounded his own medicines because he could not write a prescription.

Mr. Kelly makes no further reference to the disconsolate widow, but the matter of *delirium tremens* peeps through his narrative later on. It was a complaint with which the goldfields doctors and those in the metropolis became familiar. A paper on its treatment appeared in the journal in 1856. The author was Dr. Joseph Black. He had previously practised in the West Indies, and quoted some of his observations on similar cases there. The paper was read at a meeting of the Medical Society in Melbourne, and every member present spoke from observation if not from experience. Dr. J. Black lived to a great age, and in the eighties was still taking his sunbaths in his garden in St. Kilda, a practice which was then regarded as an amiable eccentricity, not to be referred to in the drawing-room. He was a figure in finance. He was chairman at the first meeting of the Bank of Victoria. He was the purchaser at the first land sale of the south-east corner block of Collins and Swanston Streets, and it was not resold till many years after his death. Another banking doctor was Smith, of Bendigo, who, with a manager, opened in 1853 the first bank in that town. They sold it in the following year to the Bank of Victoria. Dr. Smith was one of a group including McCrae, Tierney, Barnett, Roche, Jones and Wall who started the first Bendigo Hospital. It was built of slabs and weatherboard and served till 1859, when the present building was begun. Within the next few years there came several medical practitioners whose names have become part of Bendigo's history—the Boyds, Hinchcliff, McGillivray, Atkinson and Hutchinson, donor of a valuable geological collection to the Mechanics Institute. An early practitioner of a

different standard is mentioned in George Mackay's "History of Bendigo". He was supplementing his professional income by running a sly grog bar in his surgery. The police had little difficulty in obtaining incontrovertible evidence; a fine of £50 was imposed, all the liquor was confiscated and the offender left the district.

An account of the rush to McIvor (now Heathcote) is given in Mr. Kelly's book mentioned above. The author, who had joined in the search for gold, found accommodation at a boarding-house, where, he says, you could get a bad imitation of any drink you liked to order. In a canvassed-off portion of the public room a doctor had a space six feet by three feet, which was his surgery, laboratory and dormitory, his bed being on a central shelf. A narrow shelf above and the floor below were crowded with an assortment of drugs, bottles and appliances. That some of the bottles were intended for home consumption became evident in the evening when the doctor, who had retired early, finding that the noise of a card party was becoming intolerable, appeared from his bunk and beginning to address the company as "Friends, Romans, Countrymen", gave a loud hiccup and collapsed in the midst of the party.

The licensing law which was framed to prohibit the sale of alcoholic liquor on the diggings had the result that every boarding-house and shanty became a sly grog shop, and the stock-in-trade comprised some strange mixtures. Though the really lucky diggers were supposed to order nothing but the best champagne, no spree was regarded as complete until the trembling stage was reached. The first bottle may have been true to label, but not so the second and third. Mr. Kelly in his book makes mention of a morning call at the surgery of a medical friend, where, he says, he found the room full of battered-looking men and women for whom leeches and diachylon plaster were the curative agents most in request. They were from the lock-ups of the previous night.

The surgery of the period was limited to unavoidable operations and the treatment of accidents. The physicians had to deal with outbreaks of fever and dysentery known as English cholera, which took a heavy toll. The lack of sanitary precautions, the bad water supply, the dust, the flies and the consequent contamination of food were the causes. What we now call enteric fever had various names. One of the early papers in the *Australian Medical Journal* describes a case of typhoid fever with melena under the title of "Autumnal Fever". A comparison is drawn with the milder form likely to be met with in the spring. Regarding the hæmorrhage as Nature's method of relieving an overloaded portal system, the physician prescribed a dose of forty grains of calomel, to be repeated in twelve hours. An uninterrupted convalescence followed, and it is naïvely recorded that the patient had remarked that he could feel the medicine doing him good. Fever occurred wherever the diggers went. It was ascribed to the breaking of new ground. The mode of infection was unknown. There were no nurses and no hospitals. Those who fell ill kept about as long as they could and then lay down in tent or hut till they died or recovered with such attention as their mates could provide. An outbreak at Beechworth, in 1856, led to the building of the Ovens District Hospital. That town, with its bracing climate and scenic charm, afterwards became a health resort. But year by year cases of typhoid kept occurring, until the part played by carriers was revealed. An inquiry then led to the discovery of carriers in a family which had for years been purveyors of food in the town. Appropriate measures were taken and the ghost was laid. When the hospital in Beechworth was opened Dr. Crawford, Dr. Dempster and Dr. Lee were practising in the town and were appointed as visiting surgeons, with Dr. B. C. Hutchinson as resident medical officer. He afterwards went to the neighbouring town of Wangaratta, where he conducted a large practice for many years. He was an able man of very distinguished personality and appearance. Dempster was in Beechworth for upwards of thirty years and was well thought of, as were his contemporaries Fox and Dobbyn, who had come a little later. Certain doctors followed the rushes to the Buckland, Eldorado, Wooragee, Chiltern *et cetera*, but they were migratory, and no records are procurable. It would be interesting if diaries or letters of some of those free-lances were forthcoming.

Mr. Kelly's description of what he saw at McIvor is probably quite true. The rest of his very entertaining book shows that he was a close observer and his writing has the ring of truth. One of the very difficult problems of the period was encountered when the Oriental immigrants formed their ramshackle camps. They came by tens of thousands, ignorant of the language, and innocent of the principles or the practice of sanitation, and among them were lepers and sufferers from hookworm, filaria and other Eastern diseases. The simple diagnostic vocabulary of the chemist at Emerald Hill was now subject to drastic revision.

The arrival of a ship with smallpox on board threw the people of Melbourne into a panic lest it should break out and gain virulence in the slums which the Chinese had already provided. Strict quarantine and compulsory vaccination prevented such a catastrophe. A sharp contest between Dr. Knaggs and the Government on the question of medical duty in the matter of notification brought forth some interesting correspondence, and marked an early stage in the gestation of a public health conscience.

Typhus fever, which was introduced by some of the overcrowded immigrant ships, was controlled by quarantine, and never obtained a footing, though in the casual diagnoses of the time the term typhus was sometimes applied to the severer cases of "colonial fever". One of the typhus-infected ships was the *Glenhuntly*. Quarantined off the shore at Elwood beyond St. Kilda, it gave its name to the road which now leads to the suburb of Glenhuntly. The tragedy of the *Ticonderoga*, "the plague ship", landing its ghastly freight at Point Nepean, will always be associated with the beginning of the quarantine station there.

The sudden influx of immigrants, many of whom were very undesirable colonists, severely taxed the governing machinery, and it is scarcely a matter for

ILLUSTRATIONS TO THE ARTICLE BY DR. A. HOLMES À COURT.

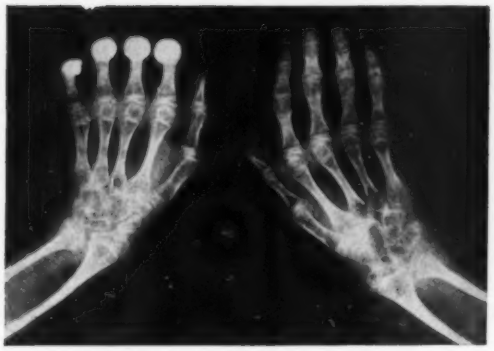

FIGURE I.
Still's disease. Type of changes seen in primary rheumatoid arthritis—generalized osteoporosis and fusiform swelling.

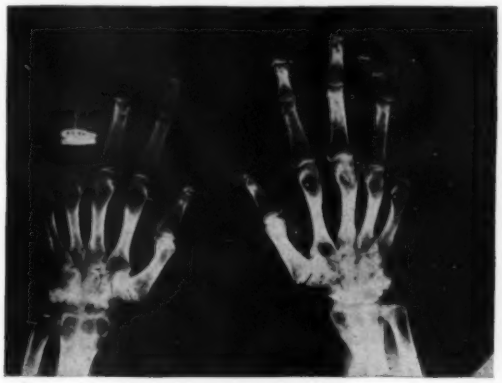

FIGURE II.
Secondary rheumatoid arthritis. Decalcification marked towards ends of bones associated with affected joints.

FIGURE III.
Secondary rheumatoid arthritis of the knee.

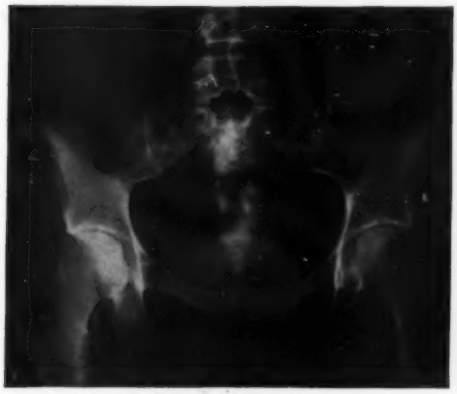

FIGURE IV.
Early osteoarthritis of the left hip, primary type, showing early cystic degeneration of the upper margin of the acetabulum.

FIGURE V.
Advanced osteoarthritis of the hip in an elderly subject—*morbus coxæ senilis.*

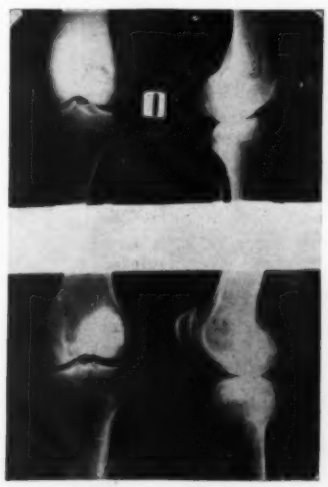

FIGURE VI.
Osteoarthritis of the knee (secondary type). Note sharpening of tibial tubercles and diminution of joint space and well-marked osteoarthritic change.

ILLUSTRATIONS TO THE ARTICLE BY DR. A. HOLMES À COURT.

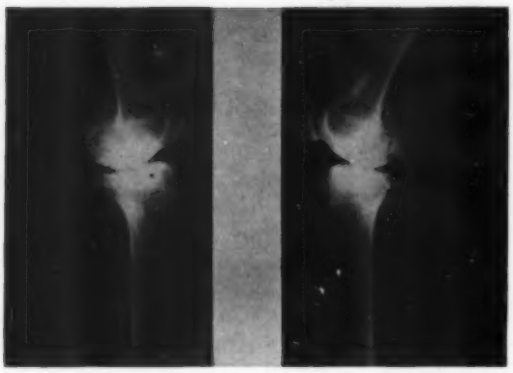

FIGURE VII.
Advanced osteoarthritic lipping of both knees, with eburnation of articular cartilages.

FIGURE VIII.
Osteoarthritis with osteophyte formation and cystic degeneration of the joint of the proximal phalanx of the great toe—osteosclerosis.

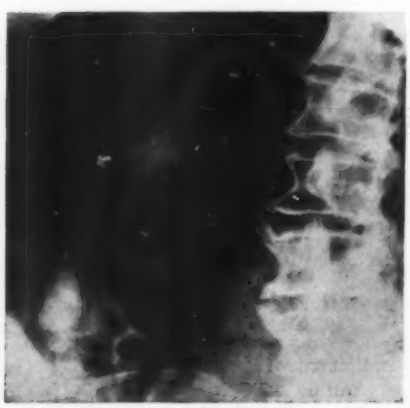

FIGURE X.
Spondylitis osteoarthritica, primary osteoarthritic type.

FIGURE IX.
Spondylitis ankylopoietica, general ligamentous calcification, spine and sacro-iliac joints involved.

FIGURE XI.
Spondylitis osteoarthritica, secondary osteoarthritic type, showing well-marked lipping and localized osteosclerosis.

surprise that the rapid readjustments which became necessary were sometimes belated. It is easy now to recognize that laws which were hurriedly made were administered with undue severity, and brought about an inevitable reaction. There is much of interest in tracing the progress of the medical profession during the period; but it is not easy to get particulars of men other than the few who were prominent in Melbourne.

One can glean very little about the doctors on the diggings before the hospitals were started, and even then the records are very fragmentary. I am hoping that this paper may bring to light some old diaries or correspondence of some of the first bush doctors. That many of them were extraordinarily efficient, self-reliant, dependable and helpful to their widely-scattered patients is well recognized, and there is no long-settled district where one cannot get evidence of the esteem in which some of the old doctors were held. If one also hears tales of the prowess of "old So-and-So if you could only get him sober", one may reflect on the dictum that if a man beats his wife, or *vice versa*, it is a news item, but the absence of such a conflict has no general interest.

The story of the Eureka Stockade is the outstanding event of Victorian goldfields history. Up to the time of the rebellion in 1854 there was no hospital at Ballarat except a hut or two at the barracks. Then huts and tents were hurriedly provided for the many wounded men, and in the next year the hospital was begun. Four visiting medical officers were appointed, namely Doyle, Stewart, Hobson and Kenworthy. T. Hillas was resident surgeon, and was succeeded by Dr. Whitcombe. Dr. Stewart took a very prominent part in civic affairs and held mayoral rank. He became a wealthy man and his splendid bequest of £25,000 to the Melbourne University has been of incalculable value to the cause of medical education. Dr. Doyle was one of the most vigorous supporters of the miners in their dispute with the Government. He was the surgeon who amputated Mr. Peter Lalor's arm after the capture of the stockade. He also amputated Mr. Cummins's arm at the house of Father Smyth. In an article published in the *Australian Medical Journal* in 1858 Dr. Carr mentions the case of a man whose leg he had had to amputate for an injury sustained at the stockade, and remarks that he himself was overcome with fatigue after twenty-four hours' continuous attendance on the wounded men. Raffaello, who wrote as an eye-witness, mentions Dr. Carr's attending to the injured and dying men within the stockade. It is well known that there were many cases of injury which were not made public because of the fear of arrest. I have not been able to find other medical references to those events. They surely must have been recorded in some notebooks. Dr. Wills, father of the explorer whose name and fame are entwined with that of Robert O'Hara Burke, was a speaker at the great meeting of citizens of Ballarat which took the first steps to clear up the disastrous dispute; by his temperate speech he appears to have given material aid towards its peaceful settlement.

Dr. Carr was returned to Parliament by the diggers' vote, as was Dr. Owens, of Bendigo. They were both ardent advocates of the claims of the men. Dr. Owens did not carry his zeal for reform so far in medical matters, and in the *Australian Medical Journal* he comes in for caustic criticism for having with Dr. Heales opposed the passage of the Bill for medical reform. They took the view that persons who had been for a certain time practising as healers of the sick had established a right to that method of livelihood. "Medicus", writing from Ballarat to the medical journal in April, 1857, says that those in Melbourne could have no conception of the extent and the dangerous character of unlicensed practice on the diggings. He gives an instance of a self-styled doctor being consulted by a man who was told that he must have some blood let. An attempt to open the median vein resulted in an incision of the brachial artery. The operator then applied a tourniquet with such effect that the patient lost his arm. He had no redress and had he died there would have been no inquest, because a death certificate did not require the signature of a legally qualified man.

Midwifery was carried on by self-styled nurses, many of them being the keepers of shanties and sly grog shops. They advertised themselves as not requiring a doctor's assistance, and medical aid was summoned only when the best efforts of patient and nurse had come to naught.

As each new rush occurred the chaotic conditions were repeated. Dysentery was a common ailment, and gastro-enteritis caused terrible mortality among children. At Castlemaine, the Pennyweight Flat cemetery was known as the children's cemetery because of the number of little graves.

The Castlemaine Hospital dates from 1853. The first doctors were McGrath, McKay and Prenshaw, the last-mentioned being coroner. The Maryborough Hospital was opened in 1854, and Dr. Laidman and Dr. Rose were the visiting surgeons. Dr. R. H. Dunn, I learn from the present secretary of the hospital, held the position of resident surgeon for fifty years, which must be a world record.

The early numbers of the *Australian Medical Journal*, which was first published in Melbourne in 1856, throw an interesting light on the conditions and on many of the problems of the time. The need for reform in medical legislation was great, and its attainment was difficult. It is clear that a few men devoted a great deal of time and trouble to the matter. The water supply of the town is another subject of controversy. Lead poisoning is stated to be frequent. Dr. Maund ascribes its frequency to the use of paint on the corrugated iron roofs, from which much of the drinking water was collected. Maund's versatility is shown in his report of a successful case of trephining for a case of traumatic epilepsy.

The first issue of the journal opens with an article by W. B. Wilmot, M.D., on "The Principles of Pathology", then a very humble handmaid of medical practice. It reveals him as a man of cultivated mind and philosophic tendency. He appeals to his colleagues to record their deductions from experience in practice rather than to give a

bare statement of facts observed. A more practical aspect is set forth in the same volume by Dr. Collings, surgeon to the regiment then stationed in Melbourne. He describes the making of an autopsy in a small canvas tent in the shadeless barrack yard with no protection from dust and flies, without a water supply or conveniences of any kind, and with the canvas flapping about his ears. Nevertheless he gives an excellent description of the case, with a well produced illustration.

In the same year Dr. Tracy records an autopsy of a young girl who had died suddenly after a few days of illness so slight and with so little complaint of pain that her parents had not thought it necessary to summon a physician. He describes a condition of general peritonitis with a perforation of the vermiform appendix. Thus that treacherous organ makes its tragic first appearance in our medical reports. Most of Tracy's subsequent papers deal with his developing specialist work. The courage, judgement and skill with which he performed a series of ovariotomies in those pre-Listerian days were remarkable, and naturally attracted much attention.

After several years of agitation an Act to regulate the practice of medicine was passed: machinery was created for the registration of practitioners of certified standards, and a foundation was laid upon which has grown the great structure of the Public Health Department. In July, 1857, there were 487 registered medical practitioners in Victoria. Over seventy had joined the Medical Society of Victoria, which then became the recognized mouthpiece of the profession and eventually coalesced with the Victorian Branch of the British Medical Association which was formed some years later.

Too much praise cannot be given to the men who founded the Medical Society and guided its policy in those early and difficult days; and an equal meed of gratitude is due to the many practitioners who, in mining centres and country districts where public opinion was often lax and negligible, maintained the standards of their calling.

A CONTRIBUTION TO THE TECHNIQUE OF BRONCHOGRAPHY, WITH A DECRIPTION OF A NEW TYPE OF INTRODUCER FOR INTRATRACHEAL CATHETERIZATION.

By JOHN O'SULLIVAN, M.D. (Melbourne), D.M.R. and E. (Cambridge),
Melbourne.

SINCE the early descriptions by Forestier of his technique for the employment of lipiodol in the outlining of the bronchial tree, I have used this method extensively in my hospital and private practice.

From the very first the difficulties associated with the introduction of the iodized oil have prevented its more widespread use. The intercricothyreoid method described by Forestier is in his hands quite satisfactory. Unfortunately its general employment has not been always happy or successful. Injury to the tracheal mucous membrane, with at times serious reactionary œdema, has occurred. Also the opaque oil has in some instances been forced into the tissues of the neck with this method. Fatalities have been reported.

Amongst the other methods devised is the aspiration method of Singer, of allowing the patient "to breathe the lipiodol" into the trachea and bronchi. The lipiodol is gently poured onto the back of the tongue through a curved cannula. This and variations of it, after anæsthetizing the naso-pharynx, are quite successful in a certain number of cases, varying with the type of patient one is dealing with. The one disadvantage of this method is that it is not possible to outline that portion of the bronchial tree desired, especially the upper lobes. It also has the disadvantage that one is unable to watch on the fluorescent screen the passage of the lipiodol into any desired part and to control the amount of filling of the bronchi.

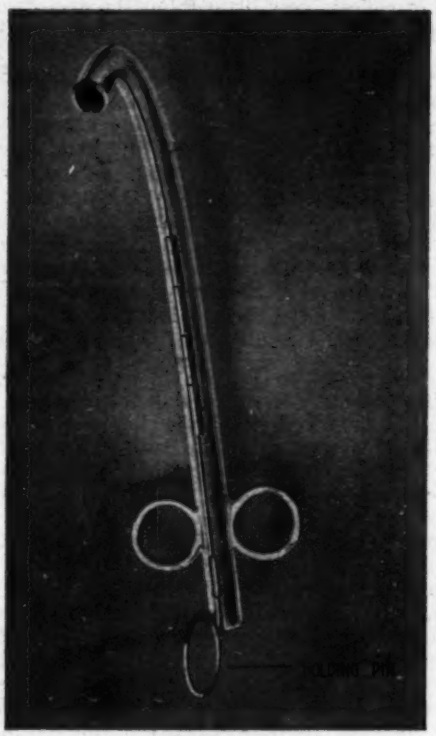

FIGURE I.
Showing introducer assembled.

The most satisfactory method is the introduction of lipiodol under screen control through an intratracheal catheter. Various methods of introduction of the catheter have been described and are in common use. In expert hands the direct vision laryngoscope method is quite successful, but this presumes skill and training in the use of this instrument. Another method is the introduction of the catheter with the guidance of a laryngeal mirror or pharyngoscope. The catheter can be introduced

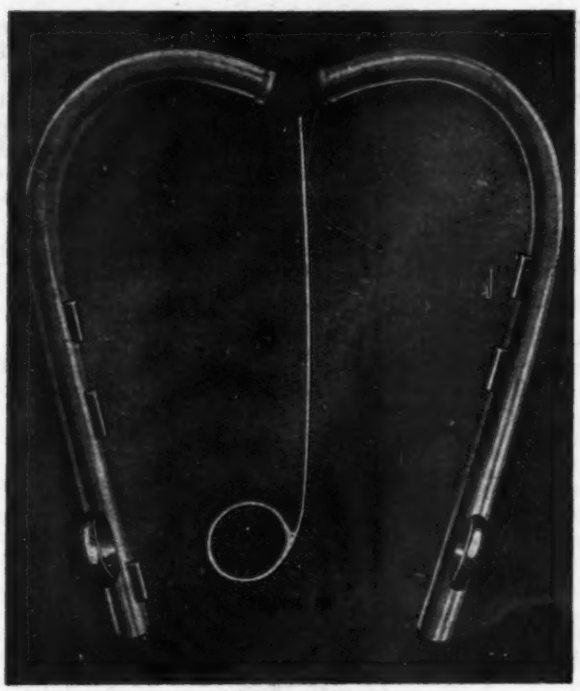

FIGURE II.
Introducer, showing component parts.

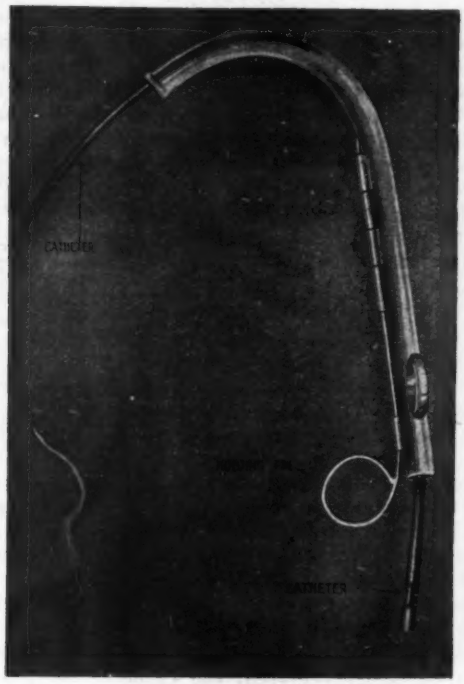

FIGURE III.
The introducer with the catheter in position.

either through the mouth or along the inferior meatus of the nose, which, together with the back of the tongue, nasopharynx and the glottic regions, has been previously anæsthetized. The nasal method is in most cases successful, and if difficulty is experienced in making the catheter pass through the glottis into the trachea, it can be usually persuaded to do so by varying the degree of flexion or extension of the neck, or, if necessary, by the use of a finger or director. The method, however, is somewhat time-consuming and makes demands on the tolerance of the patient. In certain cases also, as occurred to me in a special demonstration of the nasal method before a large audience, the presence of adenoids has made it impossible to introduce the catheter in this way.

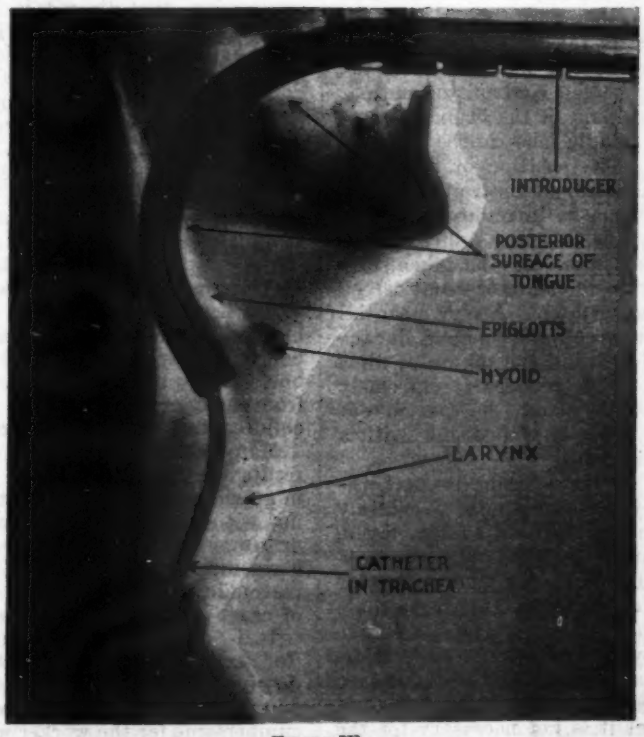

FIGURE IV.
Radiograph showing the introducer in position in the mouth and pharynx. The catheter can be seen passing into the trachea.

In order to obviate these difficulties, and by simplifying the method to render its employment more widespread, I have designed an introducer for the catheter.

The essentials of the introducer are: (i) that it will serve as a guide for the introduction of the catheter into the trachea; (ii) that the introducer itself can be easily placed in position and later removed, leaving the catheter in position without any risk of displacing the latter.

These essentials have been accomplished by designing the introducer so that it conforms in shape to the dorsal surface of the tongue and posterior surface of the epiglottis. Actually the shape was determined from the study of lateral radiographs of the naso-pharyngeal region and anatomical preparations. The introducer, which consists of a curved tube, shaped as above, is made in two sections held together in the "sagittal" plane by means of a catch, which can be easily disengaged.

The technique used by me is as follows: The tongue, palate, pharynx and entrance to the larynx, as well as the glottis, are anæsthetized with a 2% decicain solution by spraying and swabbing. The introducer, through which a soft rubber catheter has been passed until its tip has just reached the distal end of the instrument, is now introduced into the mouth and naso-pharynx. By palpation with the tip of the index finger its distal end is directed over the posterior surface of the epiglottis till it reaches the aditus of the larynx. This is well shown in Figure IV. The catheter is now passed along the introducer, through the glottis, into the trachea for a distance of 5·0 to 6·75 centimetres (two to two and a half inches). After the introduction of the catheter into the trachea the pin of the catch is withdrawn and the two sections of the introducer can be easily removed, the catheter being left in position in the trachea. The oral end of the catheter is then fixed to the patient's cheek with strapping. One cubic centimetre of the 2% decicain solution is injected through the catheter into the trachea, in order to anæsthetize it as far as the bifurcation. The injection of the lipiodol is now made on the fluoroscopic table under screen control, the patient being placed so that any part of the bronchial tree in the upper, lower or middle lobe can be outlined without any difficulty. The position of the lower end of the catheter can also be controlled on the screen. If necessary, it can be introduced into the right or left main bronchus. At any desired phase of the injection, snapshot films may be taken, provision being made for this on the fluorescent screen assembly and transformer control. A very essential and indispensable feature of the method is the introduction of the lipiodol and the taking of films under screen control. This renders it extremely desirable that the injection should be carried out by the radiologist. It is really comparable with a barium meal examination.

A great advantage of the method is that the patients experience very little discomfort, certainly much less than when other methods are employed, and the procedure is much simpler and more positive than other methods. Also the time taken for the examination is greatly reduced. It is regrettable that up to the present the expensiveness of the opaque material employed prevents the more widespread use of this valuable diagnostic method.

Another great advantage of the introducer, not mentioned above, is that it is not necessary for the patient to be in the sitting position for its employment. It is quite easy to carry out the whole procedure with the patient lying supine on the fluoroscopic table, or even, when necessary, in the prone position with the head turned to one side.

The introducer can also be employed with the patient under a general anæsthetic, and, although designed primarily for bronchographic use, the instrument can be used for the passage of a catheter for therapeutic injections or for the intratracheal administration of an anæsthetic.

The accompanying illustrations show the construction of the introducer and its method of employment.

Summary.

A simplified method of intratracheal catheterization and a new type of intratracheal introducer for bronchography are described.

AN INVESTIGATION INTO THE THICK BLOOD-DROP METHOD OF DIAGNOSIS IN LEPROSY.

By THOMAS M. CLOUSTON, M.B., B.S.,
Government Medical Officer, Nauru.

THE island of Nauru is fortunately situated as regards the control of its leprosy problem, in that the population is a small one, and a regular medical inspection of the entire native population of just over 1,600 persons is thus possible.

It is considered that the prospect of ultimately eradicating the disease is by no means remote. In this connexion a most important point in the campaign against leprosy is the establishing of a definite diagnosis at the earliest possible moment, in order that treatment, both general and specific, may be instituted in the very early stages. Even more important, if possible, would be the detection of carriers who themselves showed no physical evidence of the disease.

At the request of his Honour the Administrator, Commander R. C. Garsia, R.A.N. (retired), to whom the suggestion was made by the Director-General of Health of the Commonwealth of Australia, Dr. J. H. L. Cumpston, a trial of the thick blood-drop method of diagnosis was made during the months September to November, 1935. A series of ninety-one cases was investigated, and included all types from nodular to suspected cases and also several children born of leper parents.

Many other workers[1–11] have reported varying resuts during the last few years, and the general impression gathered is that the methods used, whilst not without some value, are not sufficiently reliable or simple to be adopted as a routine measure for early diagnosis. It is felt that what is needed is a reasonably simple technique by which large numbers of cases can be handled in a short time.

It is claimed that the more elaborate methods (for example, films prepared from venous blood) do give better results, but as pointed out by Sardjito and Sitanala,[3] such techniques are rather too cumbersome for the worker who has not the necessary training nor equipment to carry them out satisfactorily.

Technique and Results.

The technique employed in this investigation was simple. Following that of Sardjito and Sitanala,[2] the blood was taken from the apparently normal thumb or finger. The first drop was wiped away and a thick drop preparation was then made. This was then dried in air, under glass covers, dehæmoglobinized in distilled water, and again dried as before. The film was then stained by the Ziehl-Neelsen method, 5% sulphuric acid being used for decolorization. Counterstaining was carried out with aqueous methylene blue for three minutes.

A second series of preparations was also treated, as recommended by Markianos and quoted by Sardjito and Sitanala.[2] Dehæmoglobinization was carried out with alcohol solution, 1 in 3, and the preparation was then fixed in absolute alcohol, which was finally burned off. Staining was as noted in the last paragraph. This method was abandoned, as it was found after fair trial that it was no more accurate than the other, and that it did not give such good preparations for examination under the microscope.

To test the efficacy of the method employed the first cases investigated were nodular; in all of them acid-fast bacilli were found in skin section and nasal smear. There are now only twenty patients with nodular leprosy on the island. Eighteen of these were investigated and fourteen showed acid-fast bacilli in the thick blood drop taken from the finger, a percentage of 77·7. In the majority of the preparations acid-fast bacilli were abundant, being present both singly and in globi and many being intracellular; in some cases they were difficult to discover and a large area of the slide had to be examined before any were found. This percentage of positive results, whilst not so high as reported by some observers, was taken as showing that the technique was capable of demonstrating acid-fast bacilli in the majority of cases.

In addition to the nodular cases, there are also thirty-six patients in segregation with milder cutaneous leprosy. Of these, fourteen have been found to be bacteriologically positive (skin section or nasal smear) within the last two years (six within the last six months, and five more within the last twelve months). Twenty others are suffering from clinically mildly active leprosy. Pressure of other work has up to the present prevented the regular bacteriological examination that is the ideal. Two patients in segregation in addition to those already mentioned are (*a*) the orderly in charge of the leper station, who was declared fit for release six years ago, but who elected to remain with his wife and supervise treatment also; and (*b*) a woman of subnormal mentality whose clinical condition is difficult to gauge, and any more detailed examination of whom is a matter of great difficulty.

The blood of thirty-four of these patients was examined, including that of the orderly already mentioned; in each case the whole film was examined, more than two hundred fields being viewed. Acid-fast bacilli were found after this prolonged search in two cases only. In the first, one clump of bacilli was found; in the second, a few scattered rods. Clinically, the first patient suffered from a mildly active cutaneous infection with a few acid-fast bacilli in the skin section; the second patient had a quiescent infection; he was under observation for possible release in 1936, and showed a few acid-fast bacillary and coccoidal forms in the skin section.

Blood films from twenty-one persons attending the out-patient clinic were also examined. No evidence of *Microbacterium lepræ* was found in any of these films. The patients from whom these films were taken had all suffered from neural leprosy, their infections were all clinically inactive and examination of skin section and nasal smear within the last two years has given negative results, eighteen having given negative results within the last nine months.

Ten suspected patients were also examined with negative results. These were patients having a small area of hypopigmentation, not necessarily, though usually, associated with anæsthesia or analgesia and with no acid-fast bacilli in skin section or nasal smear. They were under close observation for any developments, but their condition was not definite enough clinically for them to be placed under treatment.

The same results were obtained with eight children whose ages ranged from six to ten years, born in the leper station of leper mothers. In addition to these eight children, two children of leper mothers are included amongst those attending the out-patient clinic, and two amongst those in segregation.

Discussion.

Excluding the suspects and children of leper mothers, seventy-three patients with leprosy were examined by the method described. Of these the fifty-two in segregation may be regarded as suffering from active infections (with the exception of the orderly already mentioned), whilst the infections of the remaining twenty-one attending the clinic are quiescent, but not definitely arrested. Of these twenty-one, twelve have been released from segregation within the last six months, after having had cutaneous leprosy, and are now classed as non-infectious, although exhibiting macules. This condition may thus be classed as neural. The remaining nine have not for some years been examined for *Microbacterium lepræ*, and their infections are classed as neural on purely clinical grounds.

It is significant that the results of this investigation support the conclusions reached by Lowe in India.[5]

It is not proposed to enter into any discussion as to whether the acid-fast forms found in certain of the cases come from the skin or from the blood; that lies outside the scope of this investigation, and the matter has already been discussed by others. The important point is whether acid-fast bacilli can be found in thick blood-drop preparations in early or apparently cured cases. From a practical point of view the actual source of these bacilli is not so important as the mere fact of their presence or absence. It is obvious that it is simpler to take a few drops of blood than to prepare a skin section.

That, with the technique employed, this method of diagnosis is not suitable for early or latent cases of leprosy, is shown fairly definitely by the series of mild cases quoted—thirty-four cases of fairly active cutaneous leprosy, with only two exhibiting acid-fast bacilli in the film; twenty-one neural cases with no

positive blood preparations; and in addition ten suspected cases (in some of which treatment may possibly be given on clinical grounds within the next few months); the series also includes eight children of leper mothers, and none of them showed any acid-fast bacilli.

It may be raised as an objection that this survey deals mainly with patients under active treatment, both general and specific. This objection may be valid, and if so, calls for further investigation. This cannot be carried out here, since on the first sign of the disease, with the history of the rapid spread in previous years detailed by Bray[12] and Grant,[13] persons are placed under observation and treatment at the earliest opportunity.

Summary.

1. A simple technique for examination of the blood of persons suffering from leprosy is described. This method is not claimed as original, but it is claimed that it is adequate to demonstrate acid-fast bacilli if any are present, since fourteen out of eighteen nodular cases investigated gave positive results.

2. Two films only out of thirty-four from patients with fairly active cutaneous infections who showed also neural involvement, were after prolonged search found to contain but few acid-fast bacilli; none was found positive out of twenty-one films obtained from patients with inactive or very mild neural infections, ten obtained from suspects and eight from children of lepers.

3. It is claimed that this method is proved to be of no practical use in the detection of early or latent leprosy.

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Addendum.

Since the above communication was written, a recent mail has brought to hand the January number of the *Leprosy Review* (Volume VII, Number 1, January, 1936) that contains an article "Bacillæmia in Leprosy", by H. v. R. Mostert, in which substantially similar results to those reported above are set out.

Reports of Cases.

A CASE OF ANAPHYLACTIC SHOCK FOLLOWING A SMALL DOSE OF ANTI-TETANIC SERUM.

By ALFRED JACOBS and F. GORDON STINSON,
Harvey, Western Australia.

THE patient, a girl of six years, had not previously had horse serum in any form, but at one year had had mixed pertussis vaccine and at five years diphtheria anatoxin. Her mother was an asthmatic.

The child, having cut her foot, was ordered five hundred units of "Commonwealth" tetanus antitoxin. The serum used was the usual concentrated variety containing tricresol, 0·3%. It had been kept at room temperature and the period of full potency had expired a few weeks previously. The nurse stated that it was given hypodermically, the plunger not being withdrawn to ascertain whether the needle point was in a vein.

Within five minutes generalized itching was complained of and the child became very restless and frightened.

Within ten minutes she was screaming, the pulse was very rapid and weakening fast; breathing was shallow and hurried; the face was dead white, but an old scar on the forehead was brilliantly red; there were raised white wheals over the skin of the face, body and limbs; the face was rapidly swelling.

Within fifteen minutes the body was becoming reddish; the face was grey; the wrist pulse was imperceptible; the heart rate was very high; the child lay absolutely exhausted on her bed.

Liquor Adrenalinæ Hydrochloridi (seven minims or 0·4 ml) was now given hypodermically. The greyish pallor changed slowly to white and the heart beat rate dropped to 140. The wrist pulse was still imperceptible.

About two hours later the child vomited and the colour was for a time blue-grey. There was a tendency to choke. After the vomiting the pulse was for a few minutes just perceptible at the wrist.

An hour later the bowels opened. The child sat up and became badly collapsed. The skin of the body was now bright red and extremely irritable.

By midnight (five hours after the giving of the serum) the pulse could be detected again at the wrist. There was a temporary sonorous rhonchus in one lung. The child passed a restless and miserable night, complaining continually of the irritability of the rash, which was now pink.

From 9 a.m. to 11 a.m. she was semi-delirious. The pulse, which was still very weak, was at the rate of 110 to 120 per minute.

During the afternoon she slept and awoke about 6 p.m., much improved. Her temperature was then 37·5° C. (99·6° F.), the pulse rate was 100, and the respiration rate was 24. During the day she had had a mixture containing calcium and vitamin *D*.

A period of complete freedom from symptoms now intervened, but five days after the original injection a typical serum rash appeared, which was extremely irritable. The temperature rose to 37·5° C. (99·6° F.) and the pulse rate to 124. Fairly prompt relief was obtained at first with adrenaline, but two later injections were much less effective. By the following day her condition had much improved, and on the seventh day she had completely recovered. She has remained in good health.

Points which arise are:

1. The need for care in the use of serum, even if concentrated and in small dosage.

2. The possibility that the diphtheria anatoxin acted as a sensitizer. If diphtheria anatoxin can so act, such accidents as the one here recorded are likely to be not uncommon.

Reviews.

BIOGRAPHICAL STUDIES.

BIOGRAPHIES of varying merit have never poured from the press in a greater flood than now, and many of them have been of medical interest. Of these, several of outstanding merit have been reviewed in these columns during recent months; in general excellence none has surpassed "The Medical Dictator", a volume from the pen of Professor Major Greenwood.[1] The title of the book refers only to the first personality discussed in its pages, Galen.

Galen, who was born at Pergamos in A.D. 129, achieved no greater success in his lifetime than many another capable physician. His fame was entirely posthumous; for thirteen hundred years he was not merely a dictator, he was the emperor of the medical world. For thirteen hundred years medical men read Galen's voluminous works and nobody dared to contradict them. In 1559, Dr. John Geynes, of Oxford, presumed to question the authority of the great man, whereat the London College of Physicians tartly demanded that Geynes should point out all the erroneous statements in Galen's works. The contrite doctor wisely declined the task and abased himself by writing an apology. Today, eighty-two of Galen's works survive, none of them of the remotest value to anybody. Galen has an historical importance, and that is all. His age-long sway over the medical thought of times past is due to the fact that he was able to impress his doctrine of the "humours" upon his successors; he founded a theory which had an undeservedly long life. He was satisfied, and he satisfied others, that a lack of balance in the four primary humours was the source of all bodily ills; if any one humour exerted an unduly great effect, there followed an upset of that equilibrium which constitutes perfect health. Unlike Hippocrates, he was unable or he did not care to amass carefully made notes of objective happenings; and yet the very words he used in propounding his theory are still with us. They have lost their original physiological meanings, but since the time of Shakespeare they have had a psychological connotation.

With one exception the remaining six subjects of Professor Greenwood's study are men little known to the general reader. The first of these six is John Freind, the son of a country clergyman, who was born in 1675. Becoming an M.B. in 1703, he won fame by writing a book on menstruation. This work was said by admirers to have been admirable for the beauty of its style, its wonderful succinctness and perspicuity, and the happy concurrence of learning and penetration visible through the whole. Over thirty years later another admirer remarked that the entire female sex should be grateful to Freind for the work written in its service. Freind saw service under the Earl of Peterborough in Spain and later under Marlborough's successor, the Duke of Ormond, during the campaign in Flanders. His later years were spent in practice in the West End and as a member of Parliament. His pronounced Tory convictions led to his imprisonment in the Tower during 1723, and here he amused himself by composing a Latin treatise on smallpox. His name has come down to us as that of a man who loathed quackery, either professional or intellectual. He devoted years to the search for plain reliable remedies free from the taint of necromancy and general hocus-pocus then so common.

Dr. Peter Mere Latham, born in 1789, was a classical scholar of such learning that his Harveian Oration, delivered in 1839, was acclaimed as the best for nearly eighty years. He became a physician of Saint Bartholomew's Hospital, and though forced to give up this appointment through ill-health while still in his forties, he lived to the age of eighty-seven. An excellent speaker and writer, he became famous for his clinical lectures on diseases of the heart, thus earning the nickname of "Heart" Latham. His literary output was large, and an edition of his works has been edited for the New Sydenham Society by the late Robert Martin. Latham's works are now obsolete, if only for the reason that, though there have been no fundamental changes in the methods of treatment or diagnosis since his day, the facts of medicine are more readily discoverable in the books of the present. Latham insisted upon the importance of bringing pupils into contact with disease in the wards, irrespective of their knowledge of general science or their devotion to text-books. Fifteen years before the invention of the ophthalmoscope he urged his students to lose no chance of studying disease of the eye. There, he said, almost all diseases were to be seen in miniature, almost as through a glass. Within a few years von Helmholtz introduced the instrument which as a means of diagnosis has never been excelled.

William Farr (born 1807) was the son of a Shropshire farm labourer, who, at twenty-six, set up in practice in London. He advertised that he would give lectures on "Hygeine" (*sic*). Two of these, one about Hippocrates and one on the sanitary code of Moses, were delivered and reached print in the columns of *The Lancet*. And now Farr dipped his pen into ink with real purpose; he published long papers on life assurance and essays on the clinical statistics of cholera. During the next three years his fame as a medical statistician spread, and in 1839 he was appointed Compiler of Abstracts in the General Register Office at a salary of £350 *per annum*. Though a subordinate, his touch was plain in the reports which appeared over the signatures of his superiors. The second annual report published after his appointment contains his announcement of the Law of Epidemics, today axiomatic. Besides, Farr introduced an element of the picturesque into these parched documents. Take one hundred thousand people, he said, and of them you will find that 1,140 will reach the age of ninety and sixteen will live to be a hundred. But one man and one woman, "like the lingering barques of an innumerable convoy", will live to reach their distant haven in 105 years and die in 1945. One man in 174 is surnamed Brown, wrote Farr. Then he proceeds to fill four pages with a list of curious names—names such as Cabbage, Puddle, Bultitude, Smallpiece, Twist and Earwaker—which must have given intense joy to the then Prime Minister, a man of vast learning and a lover of oddities. Farr wrote much on the nomenclature of disease and did much to stabilize its classification; but with all his gifts he remained a subordinate all his days. He had made English vital statistics the envy and admiration of statisticians the world over, but he never became registrar-general. After his death (1883) he was awarded a gold medal by the Committee of Council of the British Medical Association and thanked for his labours on behalf of statistical and sanitary science and for the extraordinary services his work had rendered to the advancement of the health of the nation.

Pierre Charles Alexandre Louis was also a medical statistician, but of a different kidney to Farr. He graduated at Paris in 1813, and seven years later was practising in Odessa. While there, he was so shocked by the mortality attending an epidemic of diphtheria that he returned to Paris for fresh study. Beyond the fact that the importation of leeches for medical purposes now reached the figure of thirty-three millions *per annum*, no advance had been made in medical methods during his absence. Louis therefore spent six years, almost as a lone worker, at La Charité. During this period he made notes of some two thousand cases. With this material as a basis, he devoted a year to statistical tabulation and analysis. Upon this work, by far the most important he ever did, stands Louis's reputation as a great doctor. In the ordinary sense, and for the ordinary reader, Louis's writings were dull and even unreadable. The great English statisticians Galton, Graunt and Farr could make figures attractive. The figures of Louis were just "sums". Simply stated, the Frenchman's method amounted to this: A doctor visits a sick man. The doctor wishes to know: (*a*) what the man is suffering from, (*b*) how he will get on, and (*c*) what effect, if any, will be produced upon his

[1] "The Medical Dictator and Other Biographical Studies", by Major Greenwood, F.R.S., D.Sc., F.R.C.P.; 1936. London: Williams and Norgate Limited. Demy 8vo, pp. 213. Price: 7s. 6d. net.

illness by treatment. Now, since our powers of reasoning from observed facts are strictly limited, it follows that the above questions are best answered by the statistical method. Without doubt, no two individuals will exhibit the same symptoms, but by the collection of sufficient observations we can arrive at a group characterization. When, therefore, we find that certain signs and symptoms are frequently associated and are then the forerunners of such-and-such events, we are entitled to express opinions concerning diagnosis and prognosis which will be right more frequently than wrong. Louis's fame, then, is due to his accurate noting and uniform recording of a large body of clinical experiences and to his application of arithmetical measurements of probability to correlated signs and symptoms, thus greatly enlarging the field of diagnosis and prognosis.

Nearly seventeen years have now passed since the death of William Osler at Oxford. Is that a length of time sufficient to estimate a man's standing as compared with that of his great predecessors? Professor Greenwood has essayed the task. As a man Osler was kind-hearted, generous, courteous, free of pomposity. He was an excellent companion and a lover of laughter and small jokes. A charming conversationalist, he was never an orator; ever ready with his pen, his writings never reached such noble heights as those of Clifford Allbutt. He was a man of fixed views; those he entertained at thirty were those he held at fifty or at sixty; his knowledge and his intellect grew in extent rather than in depth. None of his scientific work was of outstanding importance, nor achieved by the use of the highest intellectual methods. He was unhandy in the delicate experimental techniques. He approved and employed the statistical method, notably in his "Practice", but he was not of the august company of Farr, Louis or Galton. Yet "Osler" was and is a great text-book. Above all, it is never dull, though irreverent students have been known to make wagers on the number of times the words "Johns Hopkins Hospital" would appear on any ten pages, taken at random. In sum, Greenwood considers it likely that in a few generations Osler will be at most an occasionally cited name, a kindly and honourable gentleman who escaped a bookish immortality.

Few outside the world of research can know much of Arthur William Bacot. Born in 1866, he was a city clerk until his twenty-seventh year. Yet something more than a clerk, for without scientific training of any sort he had become by 1899 a lepidopterist of the first rank. In 1909, and in conjunction with Prout, another famous lepidopterist, he produced an important paper on the crossing of two varieties of a Geometrid moth, a contribution which was published by the Royal Society. Bacot was profoundly interested in morphological and genetic research, and at this time had already lectured before a medical audience upon his experiments in moth breeding. Soon after this the Advisory Committee for Plague Investigation happened to be seeking somebody to study the rat flea, to make investigations other than the merely morphological. Bacot, a clerk, an unknown man of forty-four, was asked to give up his living and turn himself into a whole-time investigator. His "laboratory" was a tumbledown stable infected with moulds. Here Bacot, untrained in laboratory and bacteriological technique, was asked to embark upon an entirely new line of research, the bionomics of the flea. By the end of 1911 this work was complete. He had determined the effects on the flea's life history of heat, cold, dryness and humidity. He had determined the conditions favourable to reproduction. He had discovered that the larval diet is the fæces of the adult flea. These achievements led to his appointment as entomologist to the Lister Institute, and there, with good tools, he thoroughly learned his trade. More invaluable research followed upon fleas infected with plague bacilli and on the methods of transmission of plague between mice and rats. Before the War he was at Freetown, busy on an original investigation into the bionomics of the mosquito. During the War he set to work upon the problem of lice extermination, and settled at a blow the fools and knaves who wished to sell useless insecticides to the various belligerents. In 1920, while investigating an outbreak of typhus in Poland, Bacot himself caught trench fever, but completed an entirely new set of studies on Rickettsia and lice. One year later, while engaged on problems concerned with typhus in Egypt, this great scientist somehow infected himself, perhaps through a small abrasion, with a minute quantity of fæces from a typhus-bearing louse. Within a fortnight Bacot was dead. His life had been a happy one. Like Pasteur, but without any bitterness or struggle, he was honoured and respected by the medical profession and had greatly increased the sum of scientific knowledge.

LECTURES ON DISEASES OF CHILDREN.

A SERIES of lectures by Robert Hutchison was delivered as a systematic course at the London Hospital, and in this, the seventh edition, they have been revised and in part rewritten by the author.[1]

Since their first publication in 1904 these simple and practical lectures have been regarded as probably the best thing of their kind in the English language. They do not pretend to attain the completeness of a text-book, but they supply a valuable guide to the study of the medical diseases of children not usually available in systematic lectures on medicine. For this reason the book has been adopted as a text-book for sixth-year medical students in the University of Melbourne.

For the student in Australia these lectures are interesting, not only for their clarity and the wealth of experience which the author brings to his task, but for the many points of difference between the clinical generalizations which he makes and those which would be applicable to conditions in Australia, particularly Victoria.

Dr. Hutchison's advice on infant feeding is simple and practical, but he speaks almost disparagingly of modern "scientific" methods of feeding according to caloric requirements. This is perhaps a pity, because, although it is possible to be too fussily mathematical in feeding infants, it is hardly possible to know too much about what is being given and how the baby is dealing with the various constituents of its diet.

In discussing congenital pyloric stenosis, Dr. Hutchison makes a stronger plea for medical as against surgical treatment in certain cases of long standing than is usually accepted in Australia. Possibly our ideas on this subject should be reconsidered.

His chapter on tuberculosis in childhood is masterly, and, again, is interesting, because of the very different incidence of the various types of this disease in London and in Australia. His discussion of the dyspepsias of childhood is a classic and should be read and reread by every general practitioner and pædiatrician. Rheumatism is discussed in an intensely interesting and practical way, and the chapter illustrates the noteworthy fact that the type of child most commonly afflicted with rheumatism in London is not the type most commonly attacked in Australia, although the former type does appear here. To quote the author's words:

> They are dark rather than fair, their hair is dark, the eyes are dark, and they have long, dark eyelashes. At the same time, they have a peculiarly white skin and a very good complexion, they have a clear bluish-white sclerotic, and they have often very well formed, massive teeth, and particularly large, square, central upper incisors—the so-called "paving stone" teeth.

In Victoria, on the other hand, this type is relatively uncommon, by far the greater proportion of rheumatic children being of the fair, sandy-haired, freckled face type.

The chapter on mental deficiency has been revised and represents, as in earlier editions, a practical and helpful summary of this important subject.

To sum up, it would be difficult to imagine a more valuable book for the student, the practising physician, or the specialist, all of whom owe a debt of gratitude to Dr. Hutchison for thus making available the fruits of his wisdom and experience.

[1] "Lectures on Diseases of Children", by Robert Hutchison, M.D., LL.D., F.R.C.P.; Seventh Edition; 1936. London: Edward Arnold and Company. Medium 8vo, pp. 460, with illustrations. Price: 21s. net.

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THE HEALTH OF BEETHOVEN.

In 1770, Ludwig van Beethoven, perhaps the greatest musician the world will ever know, was born at Bonn. In the century or so which has passed since his death his music may be said to have become the standard by which all other music is to be judged; and biographers and critics have speculated upon the effect produced on the main body of his music by the composer's lifelong ill-health. The latest of such speculations is from the pen of Dr. I. W. Voorhees[1] and is plainly the writing of a man who is a lover of music and is well versed in his subject.

In these days we attempt to assess the factors which, from his youth up, make a man wretched or make him happy; we can see today that happiness for young Ludwig was impossible. His mother, a cook's daughter, was tuberculous and died before her great son reached his twenties. His father, a musician in the court band of the Elector of Cologne, drank heavily, and in his cups was a harsh and hectoring bully, always ready to cuff his son during pianoforte lessons. The young Beethoven suffered besides from colitis, and the malady, whatever its cause, continued to pester him throughout his life. It may well be, as Voorhees suggests, that Beethoven's deafness, now a matter of history, had its origins in the chronic toxæmia associated with this colitis.

Some have said that the composer was docile in face of his woes, bearing his deafness and his periodical attacks of colitis with saintly calm. The statement is as hollow as a jug; nobody who hears, say, the third symphony or the fifth, can doubt that there was a man bowed under cares so heavy as to make him value life no more than a doit. Beethoven in his dark moments of storm and despair was a tragic poet no less than the writer of the Book of Job, and for much the same reasons. The truth is that throughout his professional life he raged against ill-health and grasped at all chances of relief. He wandered from doctor to doctor, fighting with them all. To him all medical men were fools. They took his money and gave him useless drugs. But they could not cure his colitis and they did nothing, nothing to improve his hearing.

Deafness first overtook Beethoven in 1799. It fast grew worse and forced him to give up thoughts of a long European tour and to settle instead in Vienna. "My hearing weakens", he said. "My ears are ringing and singing night and day. I am deaf. In any other profession this might pass, but in the one I have chosen it is a wretched plight to be in." It was indeed. All high notes were inaudible to him, and to hear any instrumental music at all he was forced almost to lean over the orchestra. During these years the composer shunned society, and the fact of his deafness was known only to a few close friends. He did not conceal his sorrow and anxiety from these intimates, as he saw that never could he hope to realize his project of becoming a famous conductor and a piano virtuoso. For days on end he was racked by bouts of colitis and his head was never free of the buzzings, roarings and whistlings which are the tokens of auditory nerve degeneration. By 1810 all Vienna knew that Beethoven was deaf. The composer himself toyed with the idea of suicide.

[1] *Bulletin of The New York Academy of Medicine*, March, 1936.

Still, he had read somewhere (so he told a friend) that man should not part wilfully from this life while he still could do one good deed. "But for this, I should ere now have ceased to exist, and by my own hand too." It is hard to imagine that a man who suffered so in mind and body could have been what the world calls normal.

Beethoven was not normal. Out walking, he would break into a sudden trot and talk to himself and shout. Once he frightened a team of oxen into a clumsy gallop. He hated servants and continually roared at them. He threw eggs by the dozen at his cook. After hours of black depression he would burst suddenly into gales of laughter, insult all his friends, or divert himself by concocting some monstrous practical joke. When washing—and he was always washing—he flooded his room with water. Sometimes he would delight his own circle by improvising at the pianoforte almost till dawn; sometimes, when asked to play, he would fly without warning into a towering passion, and in one such outburst he very nearly brained his patron, Prince Lichnowsky, with a chair. His pupils were given lessons, or not given them, according to the master's taste. Once, wishing for riding exercise, Beethoven bought a horse. The luckless animal, forgotten by its owner, starved to death. Tortured by appalling head noises, writhing in attacks of abdominal pain, stone deaf, the victim of a hopeless love, and a sulky celibate, Beethoven yet sought to import an element of joy into his private life. He lavished all his affection and much of his money on his brother's son, a wastrel, who, after years of kindly treatment, did nothing to repay his uncle's generosity, but rather, by falling into evil courses, did not a little to hasten the great composer's end.

The amazing aspect of Beethoven, the greatest proof of his colossal genius, is that, faced by obstacles insuperable to a smaller man, he achieved what he did. In 1799 his deafness was firmly established, to grow worse with each succeeding year. Yet in 1808 he conducted—and successfully conducted—his fifth symphony for the first time. Six years later he played the involved piano part of his trio in B Major (*Opus* 97). In 1827, after a performance of the *Missa Sollenis* (none of which he heard) he became aware of the applause, earth-shaking in volume, only on turning towards the audience. Yet during the period of his complete deafness he wrote songs, sonatas, fugues, and every variety of chamber music. And he wrote the seventh, eighth and ninth symphonies. He lived in what was to him an imaginary world of sound, yet more real than the actual one, in which he could hear and set down the range of the voice, the multiple tones and keys of wood-wind or brass, and the subtle difference between the violin and the viola. In Beethoven, if ever in any man, intellect triumphed over suffering.

Late in December, 1826, the composer returned to Vienna after a short holiday. He was gravely ill and it was soon clear that he was suffering from pneumonia. Within a week, when the fever had subsided, an ascites was evident, to relieve which the abdomen was repeatedly tapped. Towards the end of March, 1827, Beethoven died. He was fifty-seven years of age.

Many opinions have been offered as to the cause of Beethoven's interstitial hepatitis and the ensuing ascites. Was it due to alcohol? The composer was accounted temperate until the last days of his life. Was the cirrhosis due to the absorption of some toxin from the intestine? Or did syphilis cause it? In the Vienna of Beethoven's day syphilis was rife; it was often acquired without any social transgression on the part of the patient. An opinion on the whole matter is virtually nothing more than a guess.

What is certain is that Beethoven's body was subjected to autopsy forty-eight hours after his death. "The auditory nerves were shrivelled and marrowless, the arteries running along them stretched as if over a crow-quill, and knotty." The left auditory nerve was much the thinner of the two. The brain was much softened, but its "circumvolutions", we are told, were deeper than normal and unusually numerous. The liver, withered to half the usual size, was of leathery consistence and covered with many irregularities. It contained nodules of which the blood vessels were constricted and thickened. This much the rough pathology of Beethoven's day can tell us.

Thirty-six years after his death his body was exhumed and, before a distinguished gathering, Dr. Wittman, of the Vienna Anatomical Institute, rolled up his sleeves and made a plaster cast. All present marvelled at the noble proportions of the frontal bones and the size of the orbits. The cast was "successful"; the great man on the slab had paid his last fee to a profession which could do so little for him during his life.

Current Comment.

ACUTE APPENDICITIS IN CHILDREN.

THE general recognition of acute appendicitis by both the professional and lay public as a serious disease has not produced so substantial a lowering of the mortality rate as is to be desired. Figures such as have been published in this journal for all cases of appendicitis in patients entering general hospitals have revealed a disturbingly high death rate, and in children the risk is known to be especially great. Children are known to suffer from an explosive variety of appendiceal disease, but the reason for this sudden onset of serious symptoms is not to be sought only in the proneness of children to the suppurative type of lesion. Much of the difficulty lies in the recognition of the disease in its early stages, and this is well pointed out in an article by Sater Nixon and Byron Nixon.[1] The following phrases taken from their article express this very well: "the child does not appear particularly ill", "the abdomen is usually 'silent' and is neither distended nor retracted". They further emphasize the vague nature of the early symptoms, which they regard as due to the side-effects of peristalsis in the appendix; this early stage they term an "endo-appendicitis". Restlessness, sleeplessness, anorexia, or a temporary abnormal increase in appetite, with some variation of the child's usual intestinal habits, are given as the earliest manifestations, which a careful history may establish as having been noted before the onset of actual pain. This pain is intermittent and colicky, and may be advertised by crying on the part of the child, whose abdominal wall at this stage shows no muscular rigidity or tenderness. Nixon and Nixon explain the lack of objective physical signs at this stage by regarding any nervous reflex irritation as concerning the autonomic and not the somatic nervous system. They give the usual warning against taking these symptoms too lightly, and emphasize the risk of a purgative given at this stage. If the disease now progresses and acute interstitial inflammation of the appendix takes place, or the more serious event of perforation occurs, the picture changes to that so commonly seen when the child is admitted to hospital. Now localization is easier; the child is more or less immobile, and pain, rigidity and tenderness usually make plain the state of affairs.

The particular argument of these authors is that every practitioner who sees sick children should realize several vitally important points in the appendiceal attacks of childhood. In the first place, the march of the illness is rapid; the simple "endo-appendicitis" of one day may be the general peritonitis of the next; secondly, diagnosis should be made at least tentatively before definite symptoms appear as a result of involvement of the somatic nervous system; thirdly, since the sympathetic nervous system only may be irritated in the early stages, abdominal palpation will yield no positive results. Whether the explanation set out in this article is quite correct or not is not really the most material point; what matters is that all practitioners should be amply familiar with this disease as seen in the child. It must be admitted that even the most experienced observers are sometimes astray in their diagnosis both in adults and children, but this very fact is one of the strongest possible arguments for a careful and close study of all children with symptoms that give rise to a suspicion of abdominal disease.

[1] *American Journal of Diseases of Children*, June, 1936.

ERGOTAMIN TARTRATE IN NON-MIGRAINOUS HEADACHES.

THAT the headache of migraine can be aborted by the use of ergotamin tartrate is well known. It has been claimed that 90% of the initial headaches of an attack of migraine have been stopped by its use. William G. Lennox and others have investigated the effect of ergotamin tartrate on non-migrainous headaches, occurring in forty-six patients.[1] They describe migraine as consisting of recurring headaches with two or more of the satellite symptoms of hemicrania, family history, nausea and vomiting, visual aura, vasomotor symptoms, and failure to obtain relief by ordinary means. Of the 46 patients, 15% were relieved, 63% were unrelieved and 22% were made worse. Of 38 persons without headache who were given the drug 16% developed a headache. It was found that the effect of ergotamin on headache could not be related directly to the presence of gastric symptoms. The authors' report is of interest not only because of their observations in non-migrainous headaches, but also on account of their interesting discussion of the way in which ergotamin tartrate acts in migraine and of its specificity in this condition. They adduce evidence to support their contention that the action of the drug is not directly on sensory nerve endings in dura or skull, but that there is an intermediate systemic action. This raises indirectly the whole question of the causation of migraine, but that is another story.

[1] *The American Journal of the Medical Sciences*, July, 1936.

Abstracts from Current Medical Literature.

SURGERY.

Pathological Fractures Due to Malignant Disease.

C. E. WELCH (*Surgery, Gynecology and Obstetrics*, April, 1936) reports a series of sixty-six pathological fractures occurring through carcinoma or primary osteogenic sarcoma. The author, because of insufficient data, is unable to state any views on the X ray treatment of bone metastasis as a prophylactic against pathological fracture. Experimental study reveals that the treatment of a simple fracture with moderate doses of X rays accelerates healing, and in this series of pathological fractures 5% healed with firm union, 15% showed some healing, and in 80% there was no evidence of healing. Of the nine patients whose fractures healed either fully or moderately, six received X ray therapy to the bone after the fracture. In the series the average length of life following fracture through carcinoma was slightly less than six months, while after fracture following osteogenic sarcoma the length of life averaged slightly over one year.

Sciatic Neuralgia.

C. W. GOFF (*The American Journal of Surgery*, April, 1936) discusses the subarachnoid injection of ethyl alcohol in the treatment of severe sciatic neuralgia and gives details of the method. While the method is simple, the author asks that it should be followed carefully, as there is only a small safety factor and it is feared that abuse of the technique will bring it into discredit.

Mortality of Operations for Perforated Peptic Ulcers.

B. T. TILTON (*The American Journal of Surgery*, May, 1936) stresses the importance of early intervention following the perforation of gastric and duodenal ulcers. Early diagnosis is essential in securing a low mortality rate. The author thinks that the mortality could be reduced to zero if the patient came to the operating table within twelve hours of perforation. After twelve hours the mortality increases rapidly. After thirty-six hours operation is rarely successful. The author reports his results in 52 cases of perforated ulcer treated within the past five years. In his series the average time elapsing between the onset of the acute signs and the start of the operation was six hours. The youngest patient was twenty years of age and the oldest fifty-three. There were 50 males and only two females. The author accounts for these figures by the type of population attracted to the clinic, which is situated in the centre of an office district. In 46 instances the perforation occurred on the anterior surface of the stomach or duodenum. Prepyloric perforations are comparatively rare. The author considers that drainage is not necessary in these early cases, although he drains the layers of the wound. In no case was a gastro-enterostomy performed.

Intestinal Strangulation.

I. AIRD (*The Proceedings of the Royal Society of Medicine*, June, 1936) presents certain experimental data that challenge the desirability of returning to the abdomen all strangulated loops which, upon release of the strangulation, appear to retain their viability. Investigating the cause of death, he found that: (i) after strangulation of a short intestinal loop death was likely to occur from perforation or peritonitis; (ii) after strangulation of long intestinal loops, death was due to loss of blood from the general circulation into the distended vessels of the strangulated loop and through them into the tissue spaces of the bowel, its lumen and the peritoneal cavity; (iii) after strangulation of loops of medium length—the common clinical form—death was due to absorption from the general peritoneal cavity of toxic transudate from the strangulated loop. Reference is then made to studies of the chemical nature of this peritoneal transudate from strangulated loops. The author concludes that release of a long-continued venous congestion of the bowel has a depressor effect and that resection of the cyanosed, though apparently viable, bowel should be performed more frequently than at present; that blood transfusion should be an invariable feature of the treatment of long-loop and even of medium-loop strangulation; and that thorough removal by suction of the peritoneal transudate should be an essential feature of the actual operation.

Multiple Primary Epithelioma in Lymphatic Leuchæmia.

R. J. V. PULVERTAFT (*The British Journal of Surgery*, July, 1936) reports the history of a man, aged sixty-six years, a grave-digger, who suffered from multiple primary carcinoma of the skin and who was also afflicted with lymphatic leuchæmia. He was treated by the application of 936·8 milligramme-hours of radium to the lesion and suitable doses to the glands. No blood examination was performed at this time. There was an excessive amount of lymphocytic infiltration of the corium. Three and a half years later a nodule appeared over the malar region, which enlarged and ulcerated. Many other lesions appeared on the hands and face and they followed a similar course. Superficial lymph glands all over the body were enlarged. There was no purpura, but numerous retinal hæmorrhages were seen. His lymphocyte count at this stage was 226,000 per cubic millimetre. An axillary lymph gland showed changes typical of lymphatic leuchæmia. Two ulcers on the hand and one ulcer on the face showed squamous-cell carcinoma. The author remarks the consistent presence of lymphocytic infiltration at the growing edge of a malignant neoplasm. Murphy has argued that the lymphocyte forms a barrier to the spread of tumours. The author suggests that tumours may spread only where lymphocytes are already aggregated, and notes that lymphatic glands are often the earliest to show metastasis. The author has not been able to find any reference to malignant changes occurring in the epithelium covering a leuchæmic deposit. He suggests that the old xeroderma was the underlying cause of the epitheliomata and that the subjacent leuchæmic deposit acted as a last straw by interfering with nutrition. Possibly the nutritional factor is an important one when malignant disease has been known to develop on an underlying fibrosis, for instance in lupus, syphilis and old burns and scars.

Relation of Pathologic Changes of the Intervertebral Disks to Pain in the Lower Part of the Back.

DAVID SASHIN (*Archives of Surgery*, June, 1936) presents an outline of the anatomy and recently investigated pathology as a possible cause of lumbar backache. The normal adult intervertebral disk contains a *nucleus pulposus* and a fibrous circumferential ring. Adjacent to the contiguous vertebræ are thin plates of hyaline cartilage. The normal adult disk has no blood supply, being nourished from the bone marrow of the bodies by diffusion. Goldthwait determined that half of the flexion of the trunk below the thoracic region occurs at the lower two lumbar disks. The remaining half of the motion occurs in the upper lumbar portion of the spine and the sacro-iliac joints. At autopsy a great variety of changes is found in intervertebral disks. Vascular infiltration, fibrous replacement of the nucleus, calcification of the nucleus, or even shrinkage, narrowing and ossification of the disk may occur. With advancing pathological change complete immobility ensues. A frequent finding is herniation from the disk into the adjacent vertebral body. This allows of vascularization and associated fibrosis. The *nucleus pulposus* loses its fluid constituent and itself shrinks and becomes firm. Puschel has investigated the water content of intervertebral disks and has found diminishing amounts with advancing age. The lumbo-sacral disk is frequently the earliest to show pathological change. In discussing the ætiology, the author blames the wear and tear of daily activities. Comparatively slight trauma may be sufficient to produce compression of a sclerosed disk. The cushion or buffer capacity of disks is greatly diminished as sclerosis progresses. In the author's series of narrowed disks

the main symptoms were dull aching pains in the lumbar region. Pains frequently radiated into the thighs. Most patients gave some history of trauma. Movements of the spine are restricted. Tenderness is frequently present over the lumbo-sacral junction. X rays afford evidence of the severity of the condition. There is a tendency for the normal lumbar lordosis to disappear. In discussing treatment the author stresses the necessity for complete muscular relaxation, and this may be obtained by hyperextending the spine and applying a plaster of Paris jacket.

The Surgical Treatment of Facial Paralysis.

LOYAL DAVIS AND DAVID CLEVELAND (*The Western Journal of Surgery, Obstetrics and Gynecology*, June, 1936) report the results of four nerve anastomoses following upon paralysis of the facial nerve. Each patient had a unilateral affection. The authors give credit to Charles Bell for his accurate description of the clinical appearances. The nerve itself may receive injury in a variety of situations. It is only rarely a bilateral affection. The authors have seen one bilateral paralysis resulting from the crushing of a patient's head beneath an overturned automobile. The technique of surgical attack will depend upon whether the nerve connexion with muscles is still intact, or believed to have degenerated entirely. When the nerve defect is irreparable, then certain ingenious operations have been devised to support the angle of the mouth with grafts of fascia. In others an attempt may be made to innervate the facial muscles by nerve anastomosis. The authors thinks that most success may follow a combination of both methods. If possible, the ideal form of reconstruction is an end-to-end suture of the severed nerve, should this be present. However, patients usually report for treatment long after the original injury has occurred. The authors have performed anastomosis with the spinal accessory nerve on one occasion and with the hypoglossal nerve on three occasions. The spinal accessory was first put to this use by Faure and Furet in 1898, whilst the hypoglossal nerve was first used for this purpose in 1901 by Korte. In 1911 Kennedy reported a series of results showing approximately equal successes by both methods. Ballance and Stewart prefer the hypoglossal facial suture because of the proximity of their cortical areas. Use of the hypoglossal nerve causes atrophy of the corresponding half of the tongue, while section of the spinal accessory causes impairment of function of the arm and shoulder. The patient's occupation must be one deciding factor. No discomfort is produced and no disability is caused by the atrophy of the tongue. After performance of the operation full benefit is not obtained for at least two years. The patient is instructed to persevere in reeducating his muscles. The authors employ plaster strapping to support the facial muscles while nerve regeneration is proceeding.

Pressure Necrosis: A Persistent Post-Operative Complication.

HORACE G. WETHERILL (*The Western Journal of Surgery, Obstetrics and Gynecology*, July, 1936) states that "stitch abscesses" occur as frequently today as they did twenty years ago with undiminished regularity in patients operated upon by the most capable surgeons in the cleanest hospitals, using the best suture material. Certain facts must be taken into consideration: (i) Infection may occur in the depths of the wound from within, though all contacts from without are clean. (ii) The peritoneum is able to take care of certain types of infective material without reaction, while the abdominal fat and other parietal tissues are less resistant, particularly if they have been bruised or made ischæmic by the tension of sutures or ligatures. The author states that there is nothing new about this, but there are certain fundamental truths that need to be repeated from time to time to be passed on to the newer generation. The surgeon who is careful in his use of retractors, uses ligatures with a small bite and closes the wound with a slight tension on his sutures, will have fewer stitch abscesses than the one who does otherwise.

Study of the Retained Testis in the Adult.

J. M. PACE AND H. CABOT have made a study of the degenerative processes occurring in retained testes and present their conclusions from a series of twenty-four cases (*Surgery, Gynecology and Obstetrics*, July, 1936). They found that there appears to be a progressive deterioration as age advances. Specimens removed in the seventh decade showed extensive degeneration and hyalinization, while very little change was found in most specimens obtained during the second, third and fourth decades—so little as to suggest that it would not have been impossible for regeneration to have taken place if the testis could have been placed in the scrotum. A most important finding was the occurrence of early carcinomatous changes in three of the cases, and this appeared to strengthen the opinion that the abnormally placed testis is more likely to develop cancer than the normally placed testis.

Relief of Post-Operative Intestinal Atony with Prostigmin.

KARL SCHLAEPFER (*The Western Journal of Surgery, Obstetrics and Gynecology*, July, 1936) states that the resumption of normal peristalsis at the earliest possible moment is the chief concern after any laparotomy. Physostigmine has been used with good results. Aeschlimann and Reinert have shown that in a concentration of 1 to 1,000 physostigmine will stop a frog's heart in diastole. Prostigmin was evolved as a synthetic stable compound with similar action on the smooth musculature of the intestines without deleterious action on the heart. It is a white crystalline powder, very soluble in water and to a less degree in alcohol. Aeschlimann and Reinert investigated the pharmacological action of prostigmin. It contracts the smooth muscles of the intestines through stimulation of the parasympathetic fibres, increasing the muscular tone and promoting peristalsis. It antagonizes the action of atropine, epinephrine and papaverine. It acts mainly on the large intestines. By reflex action it facilitates the action of the small intestines. There is no reduction of blood pressure or increase in respiration. The author confirms the experience of others, that it is a stimulant for post-operative peristalsis, having no undesirable effects. Given intramuscularly, increased peristalsis becomes noticeable by the expulsion of flatus. The majority of patients do not complain of cramps. Saegesser found that in 88% of cases flatus was expelled in from twenty to ninety minutes, and in 56% a bowel movement occurred in from thirty-five minutes to two hours. In paralytic ileus due to peritonitis it is a very valuable aid to promote and sustain effective peristalsis. Case reports are given of purulent peritonitis from a ruptured bile duct, and gangrenous appendicitis. The technique followed was an injection of prostigmin eight to ten hours after laparotomy. A second injection usually followed an eight-hour interval. If gas pains were conspicuous, an enema of 100 cubic centimetres of 15% sodium chloride was given half an hour after the second injection. After eight hours this procedure is repeated again if necessary. The author concludes that prostigmin administered intramuscularly early after operation is a reliable agent to restore normal peristalsis.

Regional Enteritis (Non-Specific).

K. A. MEYER AND P. A. ROSI (*Surgery, Gynecology and Obstetrics*, June, 1936) make reference to the occurrence of a regional non-specific type of enteritis, the lesion being found most frequently in the terminal part of the ileum. The pathological process is continuous and progressive, passing through three phases, namely, an acute regional enteritis, followed by a chronic hypertrophic enteritis with stenosis of the lumen, followed by chronic enteritis complicated by external or internal intestinal fistulæ. In the acute phase the diagnosis is usually made only after opening the abdomen for an appendicectomy. In the authors' series the symptoms suggested an intestinal obstruction, while the physical signs suggested an acute appendicitis; the authors think that this association might be an aid in establishing an exact pre-operative diagnosis.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on July 30, 1936, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. E. H. M. STEPHEN, the President, in the chair.

Rheumatism.

DR. A. W. HOLMES À COURT read a paper entitled "Treatment of Chronic Arthritis" (see page 415).

DR. A. L. DUCKER read a paper entitled "Treatment of Osteoarthritis and Rheumatoid Arthritis" (see page 418).

DR. D. J. GLISSAN said that he felt indebted to Dr. Holmes à Court for giving them so concise a summary of the many phases of chronic joint trouble. He had learned much from his paper. He noted the restrained tone that Dr. Holmes à Court adopted in speaking of remedies that were frequently put forward as panaceas for these conditions.

Dr. Glissan was particularly interested in osteoarthritis, in that type which corresponded to the primary form of osteoarthritis of the British Medical Association classification. His interest was largely clinical and much could be learned from observation of actual patients. One very important point he had learned in this way was that the changes designated as osteoarthritis might exist, even to a considerable degree, over a long period without causing the patient any subjective disability. Dr. Glissan mentioned a woman, seventy-four years of age, who had suffered pain and swelling in one knee for three or four months. These symptoms had followed a direct blow on the joint. She presented a typical clinical and radiographic picture of osteoarthritis. The skiagrams further revealed an equal degree of osteoarthritis in the other knee. It was clear that these changes had been present for very many years. This was a very common observation. In many cases it would be found on comparison that the changes in the joint of which complaint was made were less marked than in the unaffected articulation. From this case they learned further that osteoarthritis *per se* was not necessarily a painful condition until some other factor was added to it. In the majority of cases this factor was trauma, of which two types could be differentiated: first, the ordinary extrinsic type, such as followed a blow or twist *et cetera*, and, secondly, intrinsic trauma. To illustrate the latter type, Dr. Glissan cited the history of a middle-aged, fairly heavy woman who developed clinical signs of osteoarthritis in each knee joint following an unaccustomed run of some hundred yards. Her skiagrams revealed changes which had been symptomless over many years. In this case the sudden call upon the metabolic resources of the joints by an unaccustomed activity constituted the necessary factor. Intrinsic trauma came to act also in another type of the condition, which Dr. Glissan illustrated by means of a specimen of the head of a femur. This was no longer of the normal rounded shape, but was flattened and expanded by marginal osteophytes so as to approach a flat type of surface. It was obvious that at the joint, of which this had formed a component, the ordinary physical movements, characteristic of a ball and socket joint, could be carried out no longer. Movement could take place only in one plane. Any attempt to perform activities calling for movements outside this plane would produce intrinsic damage in the joint. Again, these changes might occur slowly and quietly, producing no subjective signs until they reached a stage where definite interference with movement would develop, causing intrinsic trauma and subjective symptoms and signs. The ordinary physical laws relating to friction and attrition were just as applicable to articulations as they were to any mechanical bearing surface, and in this they had an explanation as to why the changes of osteoarthritis affected particularly those joints in which the effects of attrition were augmented by weight-bearing—those of the lower limbs and the lower reaches of the spine.

Dr. Glissan regarded osteoarthritis as a direct response to friction. It represented an age change resulting from a disproportion between wear and a capacity for repair. This lack of capacity was probably associated with circulatory phenomena, and it was possible also that some resultant change in the quality of the synovial fluid might be responsible.

As far as treatment was concerned, the important thing was to assess the factor mentioned and to neutralize it. Rest was the best method of achieving this object. It enabled them to obviate the immediate effects of the factor. They could not cure osteoarthritis, but they could restore the patient to the *status quo*. The degree of rest varied from that which could be secured by compression bandage to complete fixation in plaster. When the changes in the shape of the joint surfaces had reached such a stage that movement was no longer possible without causing pain, then permanent fixation of the joint by arthrodesis was the method of choice.

DR. E. H. STOKES said that he had come to the meeting to learn and not to speak. In his opinion, the constitutional factor played the greatest part in rheumatoid arthritis.

Diagnosis was of great importance. Some years ago Dr. Stokes had seen a patient who said that he had rheumatoid arthritis with pain in the back. This patient was discovered to have Paget's disease.

Dr. Stokes said that osteoarthritis occurred more generally in fat people, and reduction of weight had beneficial results. He could bear this out from his experience of cases of obesity.

In conclusion, Dr. Stokes said that he had found the drug "Solganal B. Oleosum", which had been mentioned, to give good results.

DR. S. H. SCOUGALL added his thanks and congratulations. In regard to the vexed question of hypertrophic osteoarthritis, which had formed the chief aspect of the discussion, the diverse and extensive list of ætiological factors gave him cause to consider their relative significance and whether one or more of them might have basic or fundamental importance. It was now fashionable to ascribe increased importance to nutrition. Dr. Scougall thought that the future would show that the chief factor in osteoarthritis would be found in nutrition. The wide phylogenetic incidence of osteoarthritis would point to the fact that it was an inevitable concomitant of increasing years. But the essential pathology of the condition would lie in the premature onset and abnormal progression.

Dr. Scougall wished to discuss surgery performed on the lower extremities. Dr. Glissan had stressed the causes of pain in osteoarthritis. Patients whose condition was not amenable to conservative measures consulted orthopædic surgeons because of pain. Dr. Ducker had mentioned deformity first and pain second. Dr. Scougall agreed with Dr. Glissan that cases were frequently seen in which in the course of ordinary examination gross symptomless osteoarthritis was discovered, typically in middle-aged women in both knees, and in the senile hip of elderly men. But Dr. Scougall did not agree with Dr. Glissan concerning the relative importance of the types of pain suffered by most of these patients eventually. He was inclined to think that malposture, when associated with osteoarthritis, overshadowed minor traumata as a cause of pain. These malpostures probably began as relief attitudes and structural changes followed. Similar attitudes in normal joints could not be assumed in weight-bearing without pain. This factor was receiving increased recognition in connexion with surgery of the lower extremities. Previously much attention had been given to arthrodesis. Now, as a result of work in England and on the Continent, such drastic measures were finding relatively less use than measures directed solely at changing posture. Osteotomy of the femoral shaft had as its basis relief of the condition by change in posture. The success of the Lorenz and Schanz procedures was

largely due to the same fact. It also had the advantage of leaving some degree of function in the joint.

In regard to the bone drilling mentioned by Dr. Ducker, Dr. Scougall said that he had had experience of ten cases. It was claimed by those originating the work that good results were achieved in 75% or 80% of all cases of bone drilling. But the types of case subjected by him to bone drilling comprised only 10% to 20% of patients with osteoarthritis; the others had been successfully treated by more conservative measures. The knee joint had been used for testing, in view of the ease of access and subsequent comparison. In nine out of ten cases Dr. Scougall had been unable to see any appreciable improvement. Only one patient in the middle fifties with advanced osteoarthritis, who had received full orthopædic treatment for years, with rest in splints for long periods, gave a good result. This patient had refused to submit to a dietary *régime*, and it was thought that nothing short of arthrodesis would be of value. However, bone drilling was decided upon and one knee responded fully to this treatment. The other knee gave about the same amount of trouble; manipulative procedures on this knee gave equally good results.

Dr. Scougall mentioned another case that he had seen with Dr. Ducker. The patient was a girl, aged sixteen years, who presented a classical picture of early primary atrophic arthritis, which had begun with the onset of menstrual function at the age of twelve years. During the intervening four years the periods had been scanty and irregular. Dr. Ducker had suggested that the condition was due to some ovarian dysfunction, and no treatment was given other than the administration of "Systomensin". The patient made a perfect recovery in about four months.

DR. L. J. A. PARR mentioned the constitutional factor, stressed by Dr. Holmes à Court, and said that it had not received sufficient attention in the past. In cases of osteoarthritis he had seen many patients do well with reduction of diet, administration of thyreoid extract and iodine in some form, and also with the old remedy which had been cast aside, namely, Chelsea pensioner powder, consisting of guaiacum and sulphur. Dr. Parr had found this remedy of great value; moreover Llewellyn thought it of value in osteoarthritis and in gout; and as many of these patients were constipated it had the added virtue of being a good purgative. Thyreoid extract was valuable in climacteric arthritis, together with pelvic diathermy, the latter a line of treatment pioneered by Robinson.

Dr. Parr said that another aspect of osteoarthritis appeared to have escaped notice, namely, the infective factor, which had been stressed by Timbrell Fisher, Knaggs and Pemberton. Removal of a septic focus had in many cases been followed by considerable improvement as far as pain and stiffness were concerned.

In cases of rheumatoid arthritis the constitutional factor was also of great importance. Some patients in the later decades of life were subthyreoidic and benefited by thyreoid extract; and often the condition was accompanied by complete or partial absence of free acid in the stomach, whilst a few had suffered from pernicious anæmia. Dr. Parr had in the last few months seen three or four patients whose response to thyreoid, hydrochloric acid and liver therapy had been dramatic. Cases of this type were apparently not often recognized, but such patients were very amenable to the method of treatment mentioned, especially if combined with some form of physiotherapy.

The thin anæmic patient with clammy hands, evidence of cyanosis, loss of calcium and a degree of hypoacidity, was extremely difficult to treat. Dr. Parr said that a few years ago, after he had performed an operation for cure of hernia on a male patient, he had noticed a few days later that the patient developed signs of acidosis and his appearance was similar to that seen in some cases of rheumatoid arthritis. Dr. Parr therefore tried the effect of insulin and glucose on cases of rheumatoid arthritis showing pallor, cyanosis and sweating. One man suffering from well-marked rheumatoid arthritis had lost two stone in weight when Dr. Parr commenced to treat him with insulin (20 units) and glucose (two ounces) daily. In one month he had gained seven pounds in weight, in three months he had gained twenty pounds, and in five months twenty-nine pounds. When first seen at his home this patient had been on crutches, in three months he returned to work, and in five months all signs of disease had vanished. This was undoubtedly a dramatic recovery. The sedimentation rate had also become normal. The physiotherapy used by Dr. Parr included different forms of heat therapy. Hyperpyrexia was carried out by different forms of bath treatment, Wilde's steam baths, electric light (carbon filament), paraffin wax and short wave diathermy. The patient's temperature could be raised to as high as 104° or 105° F. for a varying length of time, and this, combined with other treatment, was of very great value.

As far as infection was concerned in rheumatoid arthritis, Dr. Parr believed in removing all septic foci that he could find. Most patients had teeth and tonsils removed before consultation. The question of the gastric mucosa was often neglected. In one instance, having obtained the record of test meals taken three years previously, he found that at the beginning of the disease the patient had had hyperacidity; and within three years the gastric mucosa almost failed to secrete any acid. After suitable treatment of the gastric mucosa the patient's stomach again secreted acid, and after nine months the symptoms were completely relieved and the joint condition was considerably improved. Dr. Parr said that if medical practitioners thought more in the terms of the stomach in rheumatoid arthritis better results might be achieved.

PROFESSOR C. G. LAMBIE said that, believing brevity to be the soul of wit, he had appreciated the brief compass in which the readers of the papers had dealt with a perplexing subject. He was impressed chiefly with the profound ignorance of the medical profession of the subject under discussion. It was to be deplored that knowledge of diseases was often in inverse ratio to their importance and the amount of disability they produced. From the classification of rheumatism issued by the British Medical Association it appeared that all types could be divided into two classes: (i) those of which the ætiology was admittedly unknown, and (ii) those that were held to be due to focal sepsis. There were other minor factors, like trauma, that might play some part. The position in regard to the second class was unsatisfactory, because some contended that focal sepsis was important and others that it was not. There were some cases in which no focal sepsis could be discovered and others in which there was focal sepsis but no rheumatism. After removal of the septic focus remarkable improvement was said to occur sometimes, but when no amelioration took place, various hypotheses, unsupported by evidence, were advanced to account for the failure. Even if it was contended that an observed improvement was not merely *post hoc*, but *propter hoc*, it remained impossible to say just what had taken place. The exact relationship between focal sepsis and rheumatic disease was unknown.

Most rheumatic conditions were influenced by climatic conditions, and fortunately they were subject to remissions. This, however, was a source of fallacy in evaluating methods of treatment.

Professor Lambie said that there had been a discreet silence concerning protein shock therapy. Perhaps success had been attributed to this treatment because patients, having undergone it, were so relieved to have emerged from it that they inevitably felt better and grateful for their release.

Nothing had been said concerning histamine treatment. It was generally admitted that there were two types of treatment which were beneficial: (i) rest and (ii) the application of heat. Consideration should be given to what were the best ways of applying heat. The new form of short wave therapy should perhaps receive further trial. An old method was a general heating up of the patient (pyrexial treatment), and this was coming into favour again.

In conclusion, Professor Lambie said that his feeling was one of divine discontent. The essential ætiology of rheumatic disease was still obscure; treatment was

unsatisfactory. The solution to these problems might lie in unsuspected directions.

DR. HASLETT FRAZER said that he had had painful experience of arthritis, since he had himself had spondylitis. The more he saw of arthritis, the more depressed he became by the lack of knowledge of the subject. He himself remained uncured, and he would be delighted to find someone who could cure him.

Dr. Frazer had formed a habit of dividing cases of arthritis into infective (rheumatoid) and non-infective (osteoarthritic). For the past ten years he had confined himself almost entirely to the treatment of these conditions. He had not seen any remarkable cures of osteoarthritis result from the removal of septic foci, which made him think that there must be some other causative factor besides toxæmia. Most of the cases that Dr. Frazer had seen were of the osteoarthritic variety. In London it was common to see three or four cases of rheumatoid arthritis to one of osteoarthritis; but in Sydney in private practice the position was reversed. However, it did not much matter, since one variety seemed as difficult to treat as the other.

Dr. Frazer said that most forms of osteoarthritis had their origin in some type of spondylitis, usually with accompanying neuritis. Almost invariably on radiological examination it was found that it was the cervical area of the spine that was first affected. In most cases osteoarthritis developed first in the cervical area and then in the lumbar area. Treatment in later stages was difficult because little was known of the ætiology of the complaint. Dr. Frazer was inclined to believe that rheumatoid arthritis was aggravated by a low state of health and resistance to microbic infection, whereas osteoarthritis seemed to attack people in apparently excellent physical health, who very seldom got the credit for the pains that they claimed to endure. Perhaps osteoarthritis was a variety brought about by nervous anxiety and endocrine disturbance, and it was undoubted that mental depression was an almost invariable concomitant of this type of arthritis. Trauma was frequently a cause, as Dr. Frazer had reason to know, since as a result of gymnastics he had had an attack in the neck.

In regard to physiotherapy, Dr. Frazer said that Wilde, of Bath, had devised a method of heating the body by vapour, which he termed pyretic treatment. The patient was put onto an insulated couch and steam penetrated into two chambers underneath and percolated through the matting and blankets on which the patient lay. The temperature after thirty minutes was raised to from 103° to 106° F. The patient was then taken out and wrapped in a hot pack. Dr. Frazer said that he had found the results to be exceedingly good, and it was by far the best method of obtaining pyrexia. Wilde claimed, however, that in arthritis this was a method of increasing metabolism only. The trouble with hand massage was that it could never be sufficiently strong to do good in spondylitis or neuritis. But in neuritis, pyretic treatment followed by heavy mechanical massage had led to 95% of successes. Contrary to some opinions, there were few, if any, contraindications to pyrexia induced by Wilde's method. Dr. Frazer himself had given 8,000 treatments without having any adverse results. This, in his opinion, was the best treatment; but it should be supplemented by other forms of therapy, especially by the administration of thyreoid extract in large doses and by high colonic lavage. Sulphur, iodine, gold, bee-venom and vaccines had a place in suitable cases, but were supplementary to heat, massage and movement, and relief from pain—the four great factors in treatment.

Dr. Holmes à Court, in reply, thanked those who had taken part in the discussion for the generous reception they had given his necessarily abbreviated remarks. He agreed with Dr. Glissan concerning the effects of trauma; this aspect of the question was important in worker's compensation cases, when injury was followed by arthritis.

Dr. Holmes à Court agreed with Dr. Scougall concerning degenerative changes. Septic foci had a definite sphere of influence, but the subject was a hobby-horse hopelessly overridden. When the Dental Association had invited him to discuss focal sepsis and general disease he had told to the meeting the story of a Ford motor car that he had owned. The car, being an old model with a high seat, had given him a pain in the thigh which was very like rheumatism, but which he recognized as being "driver's thigh". He sold the motor car and his pain disappeared. Some time afterwards a patient came to consult him, saying that Dr. Holmes à Court was the only doctor in Sydney whose name he knew, because he had recently bought his old Ford car. The patient was complaining of pain in the back of the thigh, and Dr. Holmes à Court advised him to have the seat of his motor car altered. The man, who was from the country, recollected that since he had not been driving the pain had been less severe. At this stage someone at the Dental Association gathering said that surely Dr. Holmes à Court had not charged a fee for this advice. He had replied that he certainly had charged a fee, since in the first place he was the only man who was able to tell the patient just what was wrong with him, and in the second place, if the man had consulted some other practitioners, he might have had all his teeth and his tonsils removed in a search for a possible septic focus to account for the pain! Naturally a searching physical examination was carried out.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal North Shore Hospital of Sydney on June 18, 1936. The meeting took the form of a series of clinical demonstrations by members of the honorary staff. Part of this report appeared in the issue of September 19, 1936.

Buerger's Disease.

DR. E. A. R. BLIGH showed two patients who were suffering from Buerger's disease.

The first was a man, aged forty-two years. He was well till four years ago, when he noticed persistent cramps in the muscles of the calf of the right leg. Later on his toes became red and eventually black. He had had a series of amputations until he reached his present state. He had lost one leg below the knee and the other above the knee. Several fingers had also been amputated. He had a trophic ulcer on the left stump which had proved very indolent. The Wassermann test yielded no reaction and no lesion was detected on X ray examination.

The second patient was a man, aged fifty-seven years. Twelve years ago he noticed colour changes in his leg. It became blue in cold weather, and on holding it up it became white, whilst it turned red very easily on the application of heat. Later, pains were present in the calves on walking. In 1930 gangrene of the toes was noted and a series of amputations was begun. The patient now had both legs amputated at the thigh. He had noticed recently that the radial pulse was becoming more difficult to palpate and that the skin of several fingers was becoming hard and glazed. X ray examination of the stumps and hands revealed no abnormality.

Dr. Bligh said that the "Medical Annual" for 1936 mentioned that adrenalectomy had been practised for this condition, but the results were variable; occasionally they were very successful, but often there was no marked improvement. Among 171 cases, in 10% gangrene had followed from accidental trauma, and in 35% from therapeutic measures undertaken for painful toes and feet. Silbert recommended for the treatment of this condition repeated injections of hypotonic salt solution, and he gave a record of 524 cases. The solution used was 5% sodium chloride in freshly distilled water. The initial dose was 150 cubic centimetres given by the gravity method into a superficial vein at the elbow. The solution was allowed to run in slowly, about ten minutes being the time, all subsequent injections being 300 cubic centimetres, given three times a week. Silbert considered that the rôle of tobacco as the exciting cause of the disease could not be doubted, and cessation of smoking was the most important part of the treatment.

Pyonephrosis.

DR. R. J. SILVERTON demonstrated a case of an atrophic, fibrotic and densely adherent pyonephrosis secondary to stricture at the lower end of the ureter.

The patient, a female aged forty-four years, had suffered from pain in the right loin for three years. There were no vesical symptoms. The urine contained a great deal of pus and was infected with *Bacillus coli*. A plain skiagram showed a group of gall-stones, but nothing else abnormal. An excretion urogram revealed a normal left kidney, but no excretion at all from the right side. At cystoscopy good indigo-carmine came from the left side, but no efflux was seen on the right side. The right ureter was completely obstructed, even to the finest bougie, six centimetres up. Dilatation of the ureter was attempted later, but failed. Therefore a retrograde pyelogram could not be made, but at a second cystoscopy a few plugs of pure pus were seen coming from the right ureteric orifice; therefore a right pyonephrosis was diagnosed and a right nephrectomy was advised. Intense fibrosis, both of and around the right kidney was the interesting feature of this operation. On exposing the perinephric fascia this membrane was found to be hard and thick with fibrosis. On cutting through about 0·5 centimetre of this layer the knife entered a cavity from which slightly turbid fluid came, evidently the hollowed kidney. Knife-point dissection had to be used to find the easiest and safest plane of cleavage, since the kidney, which was very small, was densely and thickly adherent to all its surroundings. The subcapsular plane was chosen, and after great difficulty the organ was removed, without the peritoneum being wounded. The renal pelvis and upper portion of the ureter were also densely adherent to the surroundings and had to be dissected out with the knife point.

The specimen was a shrunken kidney, about six centimetres long, and consisted of thick fibrous walls enclosing a number of loculi. There was practically no sign of renal parenchyma. The congested ureter was thin-walled and moderately dilated.

The cause of the trouble was probably a stricture six centimetres up the ureter from the bladder, but, as previously stated, this could not be definitely demonstrated before the operation, and it was unnecessary at operation to remove more than a couple of inches of the ureter.

Fibroma of the Tunica Vaginalis.

The next patient was a young man, aged thirty years, who was suffering from an infected fibroma of the *tunica vaginalis*. He had experienced severe pain in the left testis for several days. There was no vomiting and no symptoms were referred to the urinary tract.

On examination a small nodule was palpated, very tense and tender, in front of the upper end of the left testis, a little to its medial side. Pressure on the nodule caused pain to be referred up over the abdomen on that side. The body of the testis itself was also tender on palpation, but not the spermatic cord. A plain radiogram was clear, and the urine contained a few red cells and a few leucocytes. A tentative diagnosis of torsion of the *appendix testis* was made. Dr. Silverton said that quite a number of these cases had been reported, but this proved not to be one, as at operation the *appendix testis* was found to be quite normal, while no appendix of the epididymis was present. The offending nodule was a small rounded tumour partly projecting from and partly implanted in the visceral *tunica vaginalis* covering the upper and anterior portion of the testis. The nodule was dissected out and found to be submerged about 0·5 centimetre into the testis. The patient was immediately relieved of pain and got well after this.

The specimen proved to be a fibroma probably arising from the visceral layer of the *tunica vaginalis* or *tunica albuginea*. Its centre was loose and suppurating, hence the tenderness and pain.

Calculous Pyonephrosis.

The next patient was a female, aged forty-six years, who had suffered from a calculous pyonephrosis of the lower half of a double kidney. She had had pain for several years in the right side. There were heavy pyuria and a very large renal tumour on the right side. No vesical symptoms were present. A radiogram showed a large calculus in the right kidney pelvis with many small stones behind it. The right kidney shadow was very much enlarged. Unfortunately no excretion urogram was made. The urine was thick with pus. On cystoscopy there was good blue on the left side, thick pus on the right side. The left kidney urine was normal.

A right nephrectomy was performed, and it was found that the upper portion of the kidney was normal, with its own ureter; the lower half of the double kidney consisted of a calculous pyonephrosis with a very dilated pelvis, in which were one large stone and many small ones. The ureter immediately below the uretero-pelvic junction of this portion was normal.

In the specimen demonstrated the normal portion of the kidney occupied about the upper third of the total mass; the lower two-thirds was a thin, fibrous-walled pyonephrosis filled with thick pus. In the dilated pelvis a large oval calculus lay, and behind this large calculus were several small ones. The original cause of the obstruction was possibly the aberrant vessel which was found running across the upper portion of the ureter.

Renal Cell Carcinoma.

The fourth case was one of renal cell carcinoma of the kidney obliterating the pelvis and calyces entirely. The patient, a woman aged sixty-five years, had complained of agonizing pain in the left loin for ten weeks, and had been passing clots from the bladder for three months. There were no subjective vesical symptoms. Cystoscopy showed that there was a good efflux from the right side, none from the left side. Excretion urography showed a normal right kidney, but no excretion at all on the left side. A left pyelo-ureterogram showed the sodium iodide going up to the left uretero-pelvic junction, but not entering the renal pelvis.

A left nephrectomy was performed. The kidney was found to be rounded, moderately enlarged and extremely tense. The suprarenal gland was adherent to the upper pole and was removed with the kidney.

On section the specimen appeared to be a carcinoma rather than the more common hypernephroma of the kidney. The mass was uniformly grey and had completely replaced the renal tissue; further, it filled up the pelvis, causing the blockage to pyelography. A report by Professor Welsh showed that it was a primary renal cell carcinoma and that it was adherent to the adrenal cortex, which was invaded by the carcinoma.

(*To be continued.*)

BRITISH MEDICAL INSURANCE COMPANY OF VICTORIA LIMITED.

THE annual ordinary general meeting of the British Medical Insurance Company of Victoria Limited was held at the Council Chambers, Medical Society Hall, on July 28, 1936.

Dr. C. H. Mollison, the Chairman, in presenting the report and balance sheet for adoption, said the results of the year had been quite satisfactory, the net profit being £1,408 14s. 3d.

As the major portion of the Company's business was derived from the insurance of motor cars, and as the premium charges were considerably below the rates of the Associated Insurance Companies, it was really a meritorious effort to produce a surplus.

No doubt all members were acquainted with the motor accident problem. The number of accidents had been steadily increasing during the past two years, as more and faster cars had increased the road traffic, which had fallen away during the worst years of the depression. Higher speeds and a greater number of cars increased the risk of accident, even for the most careful driver, and the Company had had to face not only an increase in the number of

accidents, but a higher cost of repair per accident. The new streamlined car, with its elaborate body and fittings, was a much more costly vehicle to repair than the old plainer type.

Fortunately the Company was meeting with success in its endeavours to build up a profitable revenue from fire insurance. The directors appealed to the profession to place as much fire insurance with the Company as possible. The Company's rates were lower than those charged by the Associated Insurance Companies, but the excellent class of business received from members provided a very useful offset against the Company's more hazardous motor business.

Members were reminded that they shared in any profit the Company was able to make, because those profits were used for purposes beneficial to the British Medical Association.

Among the more important of the benefits given by the Company were: its annual grant of £500 to the Medical Society of Victoria; its generous donations to the library, not only in Melbourne, but also to two of the country subdivisions; its advance of nearly £1,200 towards the establishment of the Hospital Benefits Association of Victoria. He knew of no other sources whence these moneys might have come. The Company was, for members, the ideal cooperative institution.

He was sorry to announce that on April 28, 1936, Dr. Kent Hughes resigned from the directorate. All regretted the reason for his leaving the directorate and were very appreciative of the help he gave and the interest he took in the Company during his directorship.

The following Directors were elected: Dr. Mollison (who retired in accordance with the Articles of Association, but was eligible and offered himself for reelection), Dr. T. E. V. Hurley and Dr. F. Kingsley Norris.

For the year under review the trading result was as under:

	£ s. d.	£ s. d.
Net profit		1,408 14 3
Amount brought forward from previous year	449 19 3	
Out of which was donated to the library of the Medical Society of Victoria	128 19 9	
Leaving		320 19 6
Leaving Credit in Profit and Loss Account of		1,729 13 9
On the recommendation of the Directors a transfer was made to Reserve of		1,500 0 0
Leaving a Balance to be carried forward of		£229 13 9

NOMINATIONS AND ELECTIONS.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Lindsay, William Edward, M.B., B.S., 1936 (Univ. Sydney), Balmain Hospital, Balmain.

Medical Practice.

COMPENSATION FOR MILIARY TUBERCULOSIS.

DR. E. H. DERRICK, of Brisbane, has forwarded the following report of a workers' compensation decision.

A case of some medical interest was argued in the Industrial Court, Brisbane, before Mr. M. J. Hickey, Industrial Magistrate, who gave judgement on June 18, 1936.

The evidence showed that John McWilliams, aged forty-eight years, was a builder's labourer. He had been working continuously and was apparently in good health until August 16, 1935. On that day he lifted a heavy stone in the course of his work, and thereupon developed a pain in the right side and inability to lift his arm. He left off work at once, but did not consult a doctor till August 20. The doctor certified that he was suffering from a strain of the right intercostal muscles. He applied for and was paid compensation for a fortnight. On September 2 his doctor found that the muscle strain had cleared up and declared him fit for work. He did not, however, resume work at any time. He became ill, with shivers, vomiting, dizziness and cough, and consulted another doctor on September 6. As his condition did not improve he was admitted to hospital on September 11. He steadily became worse and died on September 25 from acute miliary tuberculosis.

His widow applied for compensation. The medical grounds for the application were that the injury of August 16 lighted up a latent focus of tuberculosis and so brought about the acute miliary form that caused his death. A majority of the seven doctors who gave evidence in the case gave it as their opinion that such a course of events was possible. At the same time miliary tuberculosis might arise without trauma. Osler's "Modern Medicine" (third edition, Volume I, 1925, page 301) was quoted, referring to tuberculosis in general:

> Trauma is important in creating favourable conditions for infection or spreading that which may be present . . . . Joint, pleural and meningeal tuberculosis is very naturally associated with injuries in the popular belief and quite justly. Blows on the chest are considered equally important in connection with pulmonary tuberculosis.

And on page 398, referring to the ætiology of acute miliary tuberculosis:

> Trauma, operations, especially upon the bones, pregnancy, and debilitating conditions are all at times of importance.

Applicant's counsel emphasized that McWilliams was well till the accident and from then on there was a continuous disability till the day of his death. (This was a cogent and probably the deciding argument.) Although there were no symptoms referable to miliary tuberculosis before September 6, that was explained by the insidious onset of this disease.

The respondent, the State Government Insurance Office, first questioned the diagnosis of acute miliary tuberculosis, claiming that the evidence for it was incomplete. (There was, however, no alternative diagnosis.) It was next pointed out that for trauma to the chest to produce miliary tuberculosis it was necessary for there to be a latent focus in the lungs. No sign of such a focus was found in this case, either clinically during his illness or at the *post mortem* examination. The honorary physician under whose care McWilliams was while in hospital, had no doubt that he died of miliary tuberculosis, but considered there was no connexion between the accident and his death. If the condition had arisen as the applicant alleged, signs would have developed rapidly in the lungs and he would expect them to have been found clinically and *post mortem*. Finally it was argued by the respondent that the onset of miliary tuberculosis was after September 2 and that the intervening space of time disconnected the relation between the injury on August 16 and the onset of the miliary tuberculosis.

After hearing the argument the magistrate found that the injury of August 16 lighted up the latent focus of tuberculosis in the deceased's body and caused the miliary tuberculosis from which he died, and that the widow was entitled to compensation under the provisions of *The Workers' Compensation Acts*, 1916-1935.

Correspondence.

RADIOLOGY AND HEART DISEASE.

SIR: I have read Dr. Kempson Maddox's article on the above subject with great appreciation. There is one point to which I would like to draw attention. Dr. Maddox states that "British physicians . . . have really only during the last five years added routine X ray examination of the heart to their diagnostic equipment. This conservatism is exemplified by the fact that up to the present time no text-book on the subject has been prepared by a British author, though large volumes are available in both French and German." Actually, routine radiological examination of the heart under the screen was the practice at the National Heart Hospital in London in 1919. All the physicians at the Heart Hospital used that method at that time. How long before that the practice was introduced I cannot say, but that takes us back seventeen years instead of five years, as Dr. Maddox stated. Further, I cannot altogether agree that failure to publish large volumes on the subject indicates conservatism, any more than that the publishing of large volumes indicates radicalism. Apart from these points I heartily congratulate Dr. Maddox on his paper.

Yours, etc.,

143, Macquarie Street, Sydney,
September 11, 1936.

G. C. WILLCOCKS.

SPONDYLITIS.

SIR: Spondylitis is the oldest pathological process of which we have any record. It is common to the Mesozoic dinosaur, the modern racehorse and the majority of mankind. It is the most frequent, the least understood and the most ignored manifestation of arthritis.

Unfortunately there is no clear-cut classification of spondylitis. One may encounter it in the degenerative or osteoarthritic form, or, less commonly, in the proliferative or rheumatoid type. One also meets cases in which one variety seems to merge into the other—what might be termed "mixed" spondylitis.

The terminology is confusing, overlapping and occasionally contradictory. For example, we have the atrophic, proliferative, ankylopoietic, toxic, ankylosing, primary, ascending, ossificans, rhizomélique, rheumatoid, Marie-Strümpell symptom complex. Then we come across the so-called *spondylitis muscularis* of von Bechterew, with its eventual kyphosis and atrophy of intervertebral disks. Thirdly, the degenerative, non-ankylosing, spondylitic, hypertrophic, osteoarthritic syndrome.

It is apparent that we have reached a stage of confusion in which one can choose one's own pet descriptive adjective without contradiction, thereby adding to one's own vanity and the general obscurity. A help towards solving this difficulty may be found possibly in Buckley's conclusion that all these badly differentiated types are but stages of severity of the same disease.

Leaving speculation and coming to actual everyday practice, the commonest variety of spinal arthritis would seem to be a spondylosis in which the picture is as follows: some occipital and/or frontal headache, persistent cervical or interscapular pain, good physical form, slightly increasing weight, disturbance of sleep, pain on movement of head or arm (if in lumbar area, then backache and/or "sciatica"), brachial neuritis, general lethargy and profound mental depression.

The two most constant signs are the continuous pain and the continuous despondency.

Very often no toxic foci can be found, and it is of the utmost importance to radiograph the cervical and lumbar spinal areas. It is very necessary, notwithstanding, to investigate the teeth, throat, kidneys, bowel, appendix, uterus and prostate, and incidentally the sexual life of the patient. Psychic disturbances of the last-named will often cause an otherwise inexplicable backache.

One should not be misled by receiving a negative report on the spine from the radiologist. Spondylitis, although often quick in symptom onset, is a slowly developing disease, and inflammation of the soft tissues causing pressure on the nerve roots may cause pain many years before any manifestation of vertebral osteoporosis, osteophytes, or ligamentous calcification shows on an X ray film.

Almost every case of brachial neuritis and "sciatica" has a central pre-spondylitic phase, and every such case can be cured, if taken before bony changes have become pronounced.

When this is neglected we often come across the ludicrous spectacle of a chronic neuritic sitting hopefully with an antiquated radiant heat-box strapped around his upper arm or leg, which later is to be handled enthusiastically by a lusty masseuse. Or perhaps it is to be a little galvanism, diathermy, static, short wave, or anything which might be called physiotherapy. This has all the outward semblance of efficient activity, but the applications should be to the spinal areas involved, and the occasion; several years previously.

Spondylitis is a disease in which time is an essential factor for successful therapy, and the best time is at the onset of the first warning—pain.

Lastly, spondylitis is not a disease of the declining years quite as much as the text-books would have us believe. I have treated a good many young people of less than thirty years of age, and this of traumatic or nervous origin. The frenzied athleticism in this country takes its toll eventually in diminished nervous reserve and the aches and pains of the late forties.

Yours, etc.,

231, Macquarie Street, Sydney.
Undated.

E. HASLETT FRAZER.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on September 7, 1936.

The following degrees were conferred:

Doctor of Medicine (*M.D.*): Walter Edward Fisher, M.B., Ch.M.

Doctor of Dental Science (*D.D.Sc.*): Everett Randall Magnus, B.D.S.

The following appointment was approved: Mr. A. B. Perry, B.D.S., as Demonstrator in Prosthetic Dentistry.

Proceedings of the Australian Medical Boards.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Lord, Frank Heighton, M.B., B.S., 1935 (Univ. Melbourne).

Hankin, Stanley, M.B., Ch.B., 1930 (Saint Andrews).

Horan, Francis James, M.B., B.S., 1933 (Univ. Sydney), The General Hospital, Hobart.

Obituary.

MATHIAS MICHAEL PERL.

WE regret to announce the death of Dr. Mathias Michael Perl, which occurred on September 11, 1936, at Windsor, Victoria.

Diary for the Month.

OCT. 1.—South Australian Branch, B.M.A.: Council.
OCT. 2.—Queensland Branch, B.M.A.: Branch.
OCT. 3.—New South Wales Branch, B.M.A.: Annual Meeting of Delegates of Local Associations with the Council.
OCT. 6.—Tasmanian Branch, B.M.A.: Council.
OCT. 6.—New South Wales Branch, B.M.A.: Council.
OCT. 7.—Western Australian Branch, B.M.A.: Council.
OCT. 7.—Victorian Branch, B.M.A.: Branch.
OCT. 9.—Queensland Branch, B.M.A.: Council.
OCT. 12.—New South Wales Branch, B.M.A.: Organization and Science Committee.
OCT. 13.—Tasmanian Branch, B.M.A.: Branch.
OCT. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
OCT. 20.—Tasmanian Branch, B.M.A.: Council.
OCT. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
OCT. 21.—Western Australian Branch, B.M.A.: Branch.
OCT. 22.—New South Wales Branch, B.M.A.: Clinical Meeting.
OCT. 23.—Queensland Branch, B.M.A.: Council.
OCT. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
OCT. 28.—Victorian Branch, B.M.A.: Council.
OCT. 29.—South Australian Branch, B.M.A.: Branch.
OCT. 29.—New South Wales Branch, B.M.A.: Branch.

Books Received.

VITAMINS AND OTHER DIETARY ESSENTIALS, by W. R. Aykroyd, M.D.; Second Edition; 1936. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 238. Price: 7s. 6d. net.

BIRTH-CONTROL METHODS (CONTRACEPTION, ABORTION, STERILIZATION), by N. Haire, Ch.M., M.B., with a foreword by A. Huxley; 1936. London: George Allen and Unwin Limited. Crown 8vo, pp. 192, with illustrations. Price: 6s. net.

HERO-DUST, by J. Kemble, Ch.M., F.R.C.S.; 1936. London: Methuen and Company Limited. Crown 8vo, pp. 209. Price: 6s. net.

POST-GRADUATE SURGERY, edited by Rodney Maingot, F.R.C.S.; Volume II; 1936. London: Medical Publications Limited; Sydney: Angus and Robertson Limited. Super royal 8vo, pp. 1835, with 1134 figures in the text. Price: £3 3s. for one volume, complete set £9 9s. (the volumes are not sold separately).

BRITISH MASTERS OF MEDICINE, edited by Sir D'Arcy Power, K.B.E., F.R.C.S., F.S.A.; 1936. London: The Medical Press and Circular (Baillière, Tindall and Cox). Demy 8vo, pp. 253, with 32 plates. Price: 7s. 6d. net.

THE EMANCIPIST: AN HISTORICAL DRAMA IN THREE ACTS, by J. M. Antill, C.B., C.M.G., and R. Antill-de Warren; 1936. Australia: Angus and Robertson Limited. Crown 8vo. pp. 182. Price: 3s. 6d. net.

TAYLOR'S PRACTICE OF MEDICINE, by E. P. Poulton, M.A., D.M., F.R.C.P., with the assistance of C. P. Symonds, M.A., D.M., F.R.C.P., H. W. Barber, M.A., M.B., F.R.C.P., R. D. Gillespie, M.D., F.R.C.P., D.P.M., N. H. Fairley, M.D., D.Sc., F.R.C.P., and W. M. Mollison, M.Ch., F.R.C.S.; Fifteenth Edition; 1936. London: J. and A. Churchill Limited. Royal 8vo, pp. 1152, with 71 plates (16 coloured) and 104 text figures. Price: 28s. net.

THEORY AND PRACTICE OF PSYCHIATRY, by W. S. Sadler, M.D.; 1936. St. Louis: The C. V. Mosby Company. Super royal 8vo, pp. 1253. Price: $10.00.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xviii.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officer.

ROYAL MELBOURNE HOSPITAL, VICTORIA: Assistant Radiotherapist.

SAINT VINCENT'S HOSPITAL, MELBOURNE, VICTORIA: Honorary Physician.

SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Director of Pathology.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

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